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AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, *Editor.*

ASSISTANT EDITORS:

JAMES T. HODGE, *For Mining and Metallurgy.*

CHARLES T. JAMES, *For Manufactures and the Mechanic Arts.*

M. BUTT HEWSON, *For Civil Engineering.*

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STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY T. POOR, Editor.

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HENRY T. POOR & CO.
No. 138 Nassau Street,
New York.

IRON BRIDGES, BRIDGE & ROOF BOLTS,
etc. STARKS & PRUYN, of Albany, New York.
having at great expense established a manufactory with every facility of Machinery for Manufacturing Iron Bridges, Bridge and Roof Bolts, together with all kinds of the larger sizes of Screw Bolts, Iron Railings, Steam Boilers, and every description of Wrought Iron Work, are prepared to furnish to order, on the shortest notice, any of the above branches, of the very best of American Refined Iron, and at the lowest rates.

During the past year, S. & P. have furnished several Iron Bridges for the Erie Canal, Albany Basin, etc.—and a large amount of Railroad Bridge Bolts, all of which have given the most perfect satisfaction.

They are permitted to refer to the following gentlemen:

Charles Cook,	Canal Commissioners
Nelson J. Beach,	of the
Jacob Hinds,	State of New York.
Willard Smith, Esq.,	Engineer of the Bridges for
Messrs. Stone & Harris,	the Albany Basin.
Mr. Wm. Howe,	Railroad Bridge Builders,
Mr. S. Whipple,	Springfield, Mass.
	Engineer & Bridge Builder,
	Utica, N. Y.

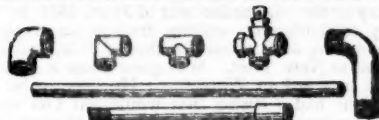
January 1, 1849.

TO RAILROAD COMPANIES AND BUILDERS OF MARINE AND LOCOMOTIVE ENGINES AND BOILERS.

FASCAL IRON WORKS.

WELDED WROUGHT IRON TUBES

From 4 inches to 1 in calibre and 2 to 12 feet long, capable of sustaining pressure from 400 to 2500 lbs. per square inch, with Stop Cocks, T. L., and other fixtures to suit, fitting together, with screw joints, suitable for STEAM, WATER, GAS, and for LOCOMOTIVE and other STEAM BOILER FLUES.



Manufactured and for sale by
MORRIS, TASKER & MORRIS.
Warehouse S. E. Corner of Third & Walnut Streets,
PHILADELPHIA.

Fire Brick.

THE Subscribers have constantly on hand Rafford's Stourbridge, Oak Farms Stourbridge, Lister, Wortley, Red and White Welsh Fire Bricks, common and fancy shapes. Also,

ROOFING SLATES,
from the best Welch quarries, and of all sizes. Also

COAL,
of all kinds—Liverpool Orrell and Cannel, Scotch, New-Castle, Pictou, Sidney, Cumberland, Virginia, and all kinds of Anthracite coals. Also,

Pig Iron, Salt, etc., etc., for sale at the lowest market price. Apply to

SAMUEL THOMPSON & NEPHEW,
275 Pearl and 43 Gold Sts., New York.

November, 23, 1849.

Patent India Rubber Steam Packing.

THIS article, made by the subscriber, who alone is authorised to make it, is warranted to stand as high a degree of heat as any that has been or can be made by any person—and is the article which has made the reputation of India Rubber Steam Packing and the demand therefor. A large assortment of all thicknesses requisite for any description of engines, steam pipes, valves, etc., constantly on hand and for sale by the manufacturer and patentee, who will give every information regarding its properties, mode of use, etc. at the warehouse.

JOHN GREACHEN, JR.,
98 Broadway, opposite Trinity Church.

New York, October, 1849.

To Railroad Companies, etc.



The undersigned has at last succeeded in constructing and securing by letters patent, a Spring Pad-lock which is secure, and cannot be knocked open with a stick, like other spring locks, and therefore particularly useful for locking Cars, and Switches, etc.

Companies that are in want of a good Pad-lock, can have open samples sent them that they may examine and judge for themselves, by sending their address to

C. LIEBRICH,
46 South 8th St., Philadelphia.

November 3, 1849.

RAILROAD India-rubber Springs.

IF any Railroad Company or other party desires it, the NEW ENGLAND CAR COMPANY will furnish India-rubber Car Springs made in the form of washers, with metallic plates interposed between the layers, or in any other form in which they can be made; in all cases guaranteeing the right to use the same against any and all other pretended rights or claims whatsoever.

F. M. Ray, 98 Broadway, New York.
E. CRANE, 99 State Street, Boston.
1849.

MACHINE WORKS OF ROGERS KETCHUM & GROSVENOR, Patterson, N. J. The undersigned receive orders for the following articles manufactured by them of the most superior description in every particular. Their works being extensive, and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and dispatch.

Railroad Work.—Locomotive Steam Engines and Tenders; Driving and other Locomotive Wheels, Axles Springs and Flange Tires; Car Wheels of Cast Iron a variety of patterns and chills; Car Wheels of Cast Iron with wrought tires; Axles of best American refined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions and of the most improved patterns, style and workmanship.

Mill gearing and millwright work generally, hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR,
Patterson, N.J. or 14 Broadway, New York.

THE NEWCASTLE MANUFACTURING Co continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack Screws, Wrought Iron Work and Brass and Iron Castings, of all kinds connected with Steam-boats, Railroads, etc.; Mill Gearing of every description; Cast Wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention.

ANDREW C. GRAY,

President of the Newcastle Manuf. Co.

DEAN, PACKARD & MILLS,

MANUFACTURERS OF ALL KINDS OF

RAILROAD CARS,

SUCH AS

PASSENGER, FREIGHT AND CRANK CARS

— ALSO —

SNOW PLOUGHS AND ENGINE TENDERS OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished at short notice; also, STEEL SPRINGS

of various kinds; and

SHAFTING FOR FACTORIES.

The above may be had at order at our Car Factory

REUEL DEAN,
ELIJAH PACKARD, } **SPRINGFIELD, MASS.**
ISAAC MILLS, } **1y48**

Iron Safes.

FIRE and Thief-proof Iron Safes, for Merchants, Banks and Jewelers use. The subscriber manufactures and has constantly on hand, a large assortment of Iron Safes, of the most approved construction, which he offers at much lower rates than any other manufacturer. These Safes are made of the strongest materials, in the best manner, and warranted entirely fire proof and free from dampness. Western



merchants and the public generally are invited to call and examine them at the store of E. Corning & Co., sole agents, John Townsend, Esq., or at the manufactory.

Each safe furnished with a thief-detector lock, of the best construction.

Other makers' Safes repaired, and new Keys and Locks furnished at the shortest notice.

H. W. COVERT

cor. Steuben and Water sts. Albany

August 24, 1849.

Patent Self-clinching Railroad Spikes.



These spikes have been in use upon various roads for several years, and have met with universal approval by Engineers. They drive in the manner shown, turning themselves, and are therefore not liable to work loose. They will prove of great value to secure the chair.

We are also manufacturing railroad spikes, hook and flange head; wrought chairs, clamps, etc., of superior quality, and are prepared to contract for any pattern or weight upon favorable terms.

SMITH & TYSON,

25 South Charles st., Baltimore Md.



P. H. Griffin,

Corner of Steuben and James Sts. Albany, N.Y.
CONTINUES to manufacture copper flues for locomotive boilers, brewers' coppers, stills, tanner heaters, etc. Copper work in general, at the shortest notice. He has constantly on hand brass cocks, brass valves, copper pumps of every variety.

Orders promptly attended to.

1y14

Mattewan Machine Works.

THE Mattewan Company have added to their Machine Works an extensive LOCOMOTIVE ENGINE department, and are prepared to execute orders for Locomotive Engines of every size and pattern—also Tenders, Wheels, Axles, and other railroad machinery, to which they ask the attention of those who wish such articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC.,
Of any required size or pattern, arranged for driving Cotton, Woollen, or other Mills, can be had on favorable terms, and at short notice.

COTTON AND WOOLLEN MACHINERY,
Of every description, embodying all the modern improvements, second in quality to none in this or any other country, made to order.

MILL GEARING,

Of every description, may be had at short notice, as this company has probably the most extensive assortment of patterns in this line, in any section of the country, and are constantly adding to them.

TOOLS.

Turning Lathes, Slabbing, Planing, Cutting and Drilling Machines, of the most approved patterns, together with all other tools required in machine shops, may be had at the Mattewan Company's Shops, Fishkill Landing, or at 66 Beaver street, New York.

WM. B. LEONARD, Agent.

Gloucester Iron Works,

GLOUCESTER, NEW JERSEY,
NEARLY OPPOSITE PHILADELPHIA.

THE subscribers having made extensive alterations in their works, are now prepared to receive orders for all kinds of Stationary and Marine Engines, Boilers, Locomotives, Sugar Mills, and every description of Mill Work.

Also—Orders for Iron and Brass Castings executed with despatch.

Having secured the valuable services of Mr. David Matthew as Superintendent (who has been for five years foreman in the Iron Works of John Watchman, now the Vulcan Works, Baltimore, and for 12 years superintendent of the Mohawk and Hudson and the Utica and Schenectady Railroads, New York,) they feel confident that all orders entrusted to them will be faithfully executed.

Having an extensive Wharf in front of their works, it will afford a safe harbor for all classes of steam vessels that may require repairs during the winter.

C. M. & J. C. SITER.

Gloucester, July 24, 1850.



NEW YORK IRON BRIDGE COMPANY.

The Bridges manufactured by this Company having been fully tested on different Railroads, by constant use for more than two years, and found to answer the full expectations of their most sanguine friends, are offered to the public with the utmost confidence as to their great utility over any other Bridge now known. The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time it is so arranged as to secure the combined principles of the Arch, Suspension and Triangle, all under such controlling power as causes each to act in the most perfect and secure manner, and at the same time impart its greatest strength to the whole work.

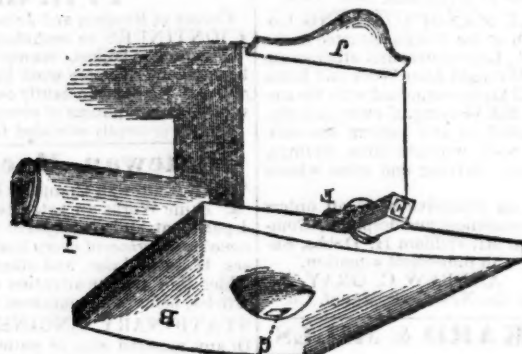
The NEW YORK IRON BRIDGE COMPANY are prepared to furnish large quantities of Iron Bridging for Railroad or other purposes, at short notice, and at moderate prices.

Models, and pamphlets giving full descriptions of the above Bridge, with certificates based on actual trial from undoubted sources, will be found at the office of the Company, 39 Jauncey Court, Wall st., or of W. RIDER & BROTHERS, 19 Nassau Street, where terms of contract will be made known, and where orders are solicited.

August 29, 1849.

M. M. WHITE,
Agent for the Company.

E. Harris' Patent Rotary Blacksmith Tuyere.



LETTERS Patent were issued January 9, 1849, to E. HARRIS, of Springfield, for an Improved Rotary Blacksmith Tuyere. Since that time there have been some hundreds put in operation, giving satisfaction and full proof of superiority over all others.

This Tuyere is so arranged that by one movement it can be changed from the largest work to the smallest; at the same time the fire is changed in proportion, thereby making a great saving in coal. Words cannot convey the full merits of this Tuyere; nor is it deemed necessary to speak in disparagement of other Tuyeres, as every smith is capable of judging for himself, and will give merit where merit is due.

I will simply say that there has not been a single instance where I have had my Tuyere put in use but it has given full satisfaction, and is recommended by all who have used them, as being superior to any other ever introduced. I would invite all to give them a trial; and the names of those using them being given, I hope it may induce others to try them.

Western Railroad Shop, Springfield, Mass.
Connecticut val., " Pittsfield, "
" " Springfield "
" " N. Hampton "
Hartford " Hartford, Conn.
New Haven " New Haven "
Norwich and Worcester, Norwich "
N. York and N. Haven, New Haven "
Saratoga and Whitehall, Saratoga, N. Y.
Vermont Central,
Hudson and Berkshire, Hudson,
L. Kingsley, Canton, Mass.

Hadley Falls Co. Ireland, W. Springfield, Mass.
Sidney Patch, Boston, "
Ames Manuf. Cor., Chickopee, "
American Machine w'ks, Springfield "
Dean, Packard & Mills, "
G. Frank Bradley, N. Haven, Conn.
Andrew Baird, "
Collis & Lawrence, "
Slate & Brown, Windsor Locks,
Gage, Nashua, N. H.
Machine shop, Manchester, "
Louis F. Lanney, Baltimore, Md.
J. H. Baerddid, 179 Chambers st. N. Y.
J. Fanning, Rochester, "
G. W. Hunt, 41 Gold st. "
Chamberlain & Waldo, "
P. S. Burges, carriage maker, "
Samuel Miller, "
J. Leggett, Stevenson falls, "
J. E. Harris, Hillsdale, "
John L. Graham, Albany, "
David Dalsell, South Egremont, Mass.
Roys & Wilcock, Berlin, Conn.

Agents for the sale of Tuyeres:
B. B. Stevens in New York and Connecticut.
A. J. VanAllen has the Agency for the Western and Southern States, and is now travelling through those States. Any communication addressed to the patentee will receive prompt attention.

E. HARRIS, Patentee,
Springfield, Mass.

November 23, 1849.

Railroad Lanterns.

COPPER and Iron Lanterns for Railroad Engines, fitted with heavy silver plated Parabolic Reflectors of the most approved construction, and Solar Argand Lamps; manufactured by

HENRY N. HOOPER & CO.,
No. 24 Commercial St. Boston.

August, 16, 1849.

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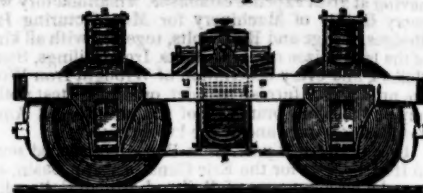
Gas Fixtures.

FIXTURES for Burning Gas for Lighting Public Buildings, Private Dwellings, Stores and Factories, manufactured by the subscriber in great variety. Orders by Mail, or left at the Factory on Causeway street, will be promptly attended to.

HENRY N. HOOPER & CO.
Boston, March 23, 1850.

6m13

F. M. Ray's Patent India-rubber Car Springs.



India-rubber Springs for Railroad Cars were first introduced into use, about two years since, by the inventor. The New England Car Company, now possesses the exclusive right to use, and apply them for this purpose in the United States. It is the only concern that has tested their value by actual experiment, and in all arguments in favor of them, drawn from experience of their use, are in those cases where they have been furnished by this company. It has furnished every spring in use upon the Boston and Worcester road, and, in fact, it has furnished all the springs ever used in this country, with one or two exceptions, where they have been furnished in violation of the rights of this company; and those using them have been legally proceeded against for their use, as will invariably be done in every case of such violation.

The Spring formed by alternate layers of India-rubber discs and metal plates, which Mr. Fuller claims to be his invention, was invented by Mr. Ray in 1844. In proof of which we give the deposition of Osgood Bradley, of the firm of Bradley & Rice, of Worcester, Mass., car manufacturers, and men of the highest respectability. In this deposition, in relation to the right of parties to use these springs, he says:

"I have known Mr. Ray since 1835. In the last of May or the commencement of June, 1844, he was at my establishment, making draft of car trucks. He staid there until about the first of July, and left and went to New York. Was gone some 8 or 10 days, and returned to Worcester. He then on his return said he had a spring that would put iron and steel springs into the shade. Said he would show it to me in a day or two. He showed it to me some two or three days afterwards. It was a block of wood with a hole in it. In the hole he had three pieces of India-rubber, with iron washers between them, such as are used under the nuts of cars. Those were put on to a spindle running through them, which worked in the hole. The model now exhibited is similar to the one shown him by Ray. After the model had been put into a vice, witness said that he might as well make a spring of putty. Ray then said that he meant to use a different kind of rubber, and referred to the use of Goodyear's Metallic Rubber, and that a good spring would grow out of it." There are many other depositions to the same effect.

The history of the invention of these springs, together with these depositions, proving the priority of the invention of Mr. Ray, will be furnished to all interested at their office in New York.

This company is not confined to any particular form in the manufacture of their springs. They have applied them in various ways, and they warrant all they sell.

The above cut represents precisely the manner in which the springs were applied to the cars on the Boston and Worcester road, of which Mr. Hale, President of this road speaks, and to which Mr. Kneivitt refers in his advertisement. Mr. Hale immediately corrected his mistake in the article quoted by Mr. Kneivitt, as will be seen by the following from his paper of June 8, 1848. He says:

INDIA-RUBBER SPRINGS FOR RAILROAD CARS.—"In our paper yesterday, we called attention to what promises to be a very useful invention, consisting of the application of a manufacture of India-rubber to the construction of springs for railroad cars. Our object was to aid in making known to the public, what appeared to us the valuable properties of the invention, as they had been exhibited on trial, on one of the passenger cars of the Boston and Worcester railroad. As to the origin of the invention we had no particular knowledge, but we had been informed that it was the same which had been introduced in England, and which had been subsequently patented in this country; and, we were led to suppose that the manufacturers who have so successfully applied this material, in the case to which we referred had become possessed of the right to use that patent. It will be seen from the following communication, addressed to us by a member of the company, by which the Worcester railroad was supplied with the article upon which our remarks were based, that we were in an error, and that the springs here introduced are an American invention, as well as an American manufacture. How far the English invention may differ from it we have had no opportunity of judging."

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SECOND QUARTO SERIES, VOL. VI., No. 38! SATURDAY, SEPTEMBER 21, 1850. [WHOLE No. 753, VOL. XXIII.]

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American Railroad Journal.

PUBLISHED BY J. H. SCHULTZ & Co., 136 NASSAU ST.

Saturday, September 21, 1850.

Pacific Railway.

TO THE EDITOR OF THE R. R. JOURNAL:

St. Louis, September 5th, 1850.

SIR—I send you a copy of the St. Louis Intelligencer, containing a notice of certain railroad meetings in the western counties of Missouri, from which you will judge of the spirit which prevails in regard to the construction of the Pacific railroad.

The interest taken in its immediate construction is commensurate with the disadvantages under which the farmers and merchants now labor. The lands being of the best quality and easily worked, there is every encouragement to improve them, but except on and near the Missouri river, the expense of transportation to a market is so great as to discourage all surplus production. The staples of the country being agricultural—hemp, wheat, to-

bacco and corn, the business of the merchant is dependent on the activity of the farming population. All, therefore, suffer, and suffer proportionally to the richness of the land, from the want of facilities of transportation. The flour of Missouri is becoming generally esteemed for its superior quality, and the hemp grown here is said to equal the best Kentucky hemp; but the excess of either of these sent to market now is trifling compared with what it is destined to be when the unoccupied lands shall have been brought under cultivation.

The greater part of the stock of this railroad will probably be taken up within the State, because the advantages which it offers as a safe investment cannot be so well understood elsewhere. I will briefly sketch these, but the precise route of the railroad not being determined yet, I am not able to give you.

The Pacific railroad company of the State of Missouri, possesses a very liberal charter from the State, authorising it to construct a railroad from St. Louis, westerly, to the State-line in Cass county, and authorising it to purchase and hold real estate. The company does not, as its title might imply, propose to extend its operations beyond the State-line. It will form one link, and evidently an important one, in the great line of communication destined to be opened over the plains, to the Pacific near San Francisco; and it will also form a link of another line of communication which by and bye will be projected towards Santa Fe, connecting the territory or State of New Mexico intimately with the seaboard States, with which her connection now can only be said to be nominal.

But not to dwell on these future large sources of business, which by some will be looked upon as more problematical and speculative than they really are, the Pacific railroad company can look forward to an immediate revenue on the completion of the road, from sources in active operation, of which we have a present knowledge and experience. These are—

1st. That portion of the present California emigration, which, concentrating at Kansas and Independence, commences there its journey across the plains. 2d. The passenger travel, and part of the freight of the Upper Missouri, from the vicinity of Independence upwards. 3d. The legitimate passenger and freight business of the rich country through which the road passes.

The emigration to California cannot now reasonably be looked upon as a temporary or speculative source of revenue. The gold diggings are not found to run out, but on the contrary the extent of the workings is on the increase. The returns of patient labor there are not found to be of the nature of a lottery. They have proved to be entirely reliable, and a man of industrious habits and good health can certainly earn, after allowing for all expenses, a per diem, far exceeding what he can obtain in the old States. He labors hard for one or two seasons, and then generally returns to his native State with the result of his accumulations, which there becomes a capital on which to base, whether as farmer or merchant, a fair business.—These circumstances, while they continue to exist, will maintain and increase the present course of emigration, and the foundations are in the meantime being laid of other sources of business on the Pacific whose importance will soon become more apparent.

The emigration across the plains during the past season is estimated by those who have attended to the reports of the numbers of wagons passing certain points at 40,000 persons;—of this number 10,000 are estimated to have passed through Independence and Kansas, coming from the lower part of this State, and from the States of Ohio, Indiana and Illinois. A large part of the emigration passed through St. Joseph, and the remainder entered on the plains from numerous points along the State-line as convenience dictated, all of them concentrating on a common trail before reaching Fort Laramie.

Now it is reasonable to suppose that had there been a railroad from St. Louis to the State-line a much larger proportion of the emigration would have concentrated upon the extreme end of the railroad, because that point would have been reached from St. Louis by railroad in one day, where from four to twelve days must have been occupied, according as the companies of emigrants passed up the river by steamboat or travelled with their wagons by land. Their entire equipments could be carried by railroad, wagons, cattle and provisions. They would thus be enabled to commence their journey on shorter notice, and with their animals in better condition. These reasons and the natural increase of the emigration will bear us out in estimating it at from 20,000 to 25,000 persons starting

from the State-line in the spring after the completion of the road. According to recent returns, over three-fourths of the entire emigration to California reaches the Pacific by way of the plains now; and it must not be lost sight of that were a railroad constructed across, this mode of reaching California would be incomparably the shortest and cheapest when compared with what are termed now the short routes, by way of Panama or Tehuantepec.

The government service will itself be considerable in the course of a few years on the routes to San Francisco and Santa Fe. A line of mails have been established this summer to Santa Fe. Military posts will be established on both routes and troops are already on their way up the country destined for this service and for the protection of convoys of emigrants, although the number of these troops is thus far entirely insufficient for the service. These sources of revenue will be found to be very considerable.

The second source mentioned, was that of the business of the valley of the Upper Missouri, embracing from the neighborhood of Independence to St. Joseph, Fort Leavenworth, Council Bluffs and upwards. Whatever general route may be adopted for the railroad, it seems to be generally concluded that a branch will be made to the Missouri river, in Jackson county, if the main line should follow the river there.

The distance from Independence to St. Louis by the railroad will be about 280 miles, by the river the steamboat distance is given as 429 miles. I mention Independence merely as a point of comparison.

The character of the Missouri river is most favorable for railroad competition, because its navigation is unusually difficult and tedious. The experience of all who have travelled on it may in this respect confidently be referred to. From ice and low water there are about three months of the year lost on an average. At present the steamboats running on the river are of the smallest class, unable to carry much freight, because the water on the bars is only 3½ feet. There are abundance of snags on the river; the channel is very variable from the light nature of the soil of the valley in which the stream meanders, and the rapidity of the current combined. The current runs at the rate of three to five miles an hour. Boats running down the river do not travel during the night except in the highest stages of the water. The passage consequently occupies from Independence to St. Louis ordinarily 3½ days, when there are no interruptions by grounding on sand bars. During the past week these interruptions have been frequent. In the trip up the boats generally run during the night, because a boat running up stream can be got off a bar comparatively easily. The time of making the passage is about the same either way, as the rapidity of the current does not admit of making more than an average of 4 to 5 miles an hour up stream, exclusive of the delays at the landings. The peculiar character of this river deserves a more minute description, but enough has been said to show that at Independence the travel proceeding to St. Louis from the Upper Missouri would not be likely to hesitate between a safe passage to St. Louis easily in one day, and a tedious and hazardous passage down the river in from three to four days. The same reasons would govern the travel from St. Louis to Independence, and the better class of freights would take the same direction. A line of steamboats would then be established on the Upper Missouri, connecting with the railroad, and gov-

erned as steamboats are not now on these rivers, by its necessary regularity.

An examination of the map and some reflection on the character of the lands of the Upper Missouri will satisfy any one that the business from that source alone will be very important. The number of steamboats which ply on the river now sufficiently indicate this. The business of the Upper Missouri will be vastly increased by a mode of communication which shall be as regular in winter as in summer, in low water as in high water, and which shall admit of the staples of the country reaching market probably at any time. This second source of present revenue is considered very important and reliable.

The third source mentioned, is the local business of the country along the line of the road. Whatever route may be adopted the agricultural tonnage must become shortly very important. The prairie lands are rich and productive, and can be brought rapidly into use. The returns of wheat, corn and hemp and stock are destined to be very large.—There is no such thing as unproductive land in this section of country. In the neighborhood of St. Louis, and for 260 miles, mostly along the line of the road, traces of coal are found in the streams.—In the neighborhood of St. Louis the coal is worked to advantage, and finds a market in that city. At the crossing of the Osage river near Jefferson city, the coal is also worked, and it has been worked on some of the branches of the Gasconade river, where it crops out. There are other points in the neighborhood of Boonville, Georgetown, Mount Pleasant, Lexington and Independence, where it is worked to a trifling extent, and chiefly for the supply of blacksmiths, the seams which crop out in these localities being too thin to warrant extensive workings.

The extent and character of the coal basin of the upper county is very little understood, there may exist heavy beds of coal below those thin beds which crop out on the surface. An examination by a proper geologist, and frequent borings, are wanted to understand the full extent and value of this immense and universal basin. Lime accompanies the coal. On the Merrimac river, there are large supplies of iron ore, and furnaces are in operation at three points. The iron produced is well known as of a very superior quality. On the Osage river the ore is also found, but it is not worked. There are numerous indications of copper veins on the Merrimac river, and there are some turnaces in operation, but the extent of these veins is little understood. The labors of a good practical geologist are everywhere wanted to give positiveness to the vague information which exists now in regard to the mineral resources of this entire region of country.

I have thus endeavored to indicate the principal sources of revenue which warrant us to take hold of our railroad enterprise to the State-line, with courage and confidence, and I have stated them, in my opinion, with great moderation, and without dwelling on the legitimate increase which the history of all railroads warrants us to expect from the peculiar business facilities which they present. I have not the leisure nor statistics now to place the statement before the eye in figures, nor would it be so reliable to the general reader, as a fair conception of the large fountains of business to which his attention has been directed, the value of which he can himself form some estimate of, and one much more likely to fall short of the result than to exceed it.

The surveys of this road are in active progress three parties being in the field; the company anticipates being able to have the first hundred miles from St. Louis prepared for contract in the course of next spring. Your obedient servant,

A. SUBSCRIBER.

The Breaking of the Iron Bridge on the New York and Erie Railroad.

What was the cause of the accident? And how should it affect the confidence in the iron bridges generally on railroads? are questions in which the public are generally interested, and which I, being a bridge engineer and builder, am particularly interested. The latter consideration induces me to attempt an answer to these inquiries; and the former, I hope, will induce others to read and consider, according to their merits, the following remarks and statements.

I have not seen the bridge in question, and therefore cannot speak positively as to the sizes and proportions of its parts; but I have seen several bridges built on the same plan, and by the same parties, and suppose this to have been proportioned in accordance with their usual practice.

Now, more than one person can testify to my having frequently remarked, in relation to those bridges, that they were *badly proportioned*, and that in certain parts which I have pointed out, they did not contain half enough iron to render them safe and reliable; that I was surprised that they endured as much as they did, and should not be disappointed to hear of their failure at any time.

Moreover, on page 754 of the American Railroad Journal for 1847, will be found an article by me, in relation to the iron bridges on the Harlem railroad, (one of the same kind,) just north of the Yorkville tunnel, in which I gave measurements and calculations, showing that certain parts of the wrought iron in that bridge, to wit, the chords, technically so called, were subject to a stress more than twice as great as the limit of safe strain, established by long experience, and adopted by engineers generally, with slight modifications, according to the views of different observers and experimenters. I will quote one or two paragraphs from that article:

"It appears, then, that a portion of the wrought iron in the bridge in question, is liable to a stress of more than 26,000 lbs.* to the square inch, from a dead load on one track of 1,000 lbs. to the foot run, and yet the bridge endures the daily and rapid transit of the trains of the Harlem railroad."

"If, then, bridges be built on the plans given in my work on bridges, which are estimated to sustain twice the above weight, or 2,000 pounds to the ft. run, with a stress of 10,000 lbs to the square in. of wrought iron, on any part, instead of 26,000 lbs. as above or less than one-fourth, the stress for the same load, will not the chances of failure be reduced almost beyond the range of possibility, as far as wrought iron is concerned?"

The point there attempted to be established was, that if bridges badly proportioned, with some parts exposed to excessive strain, would endure at all, how much more might those be relied on in which the greatest strain was only a fraction of what certain parts of the former were enduring.

Now the bridge which occasioned the catastrophe on the New York and Erie railroad, on the 1st instant, was of about the same length as that on the Harlem road, here referred to, and *probably* was similarly proportioned, the lower chord in each truss containing four square inches in cross

* The absolute capacity of wrought iron for sustaining tension is about 60,000 lbs. to the square inch of cross section, and the limit of safety is usually reckoned at about one-fourth of that amount, or 15,000 lbs. to the square inch, though for railroad bridges I have assumed it at only 10,000 lbs.

† This reads $\frac{1}{2}$ in the printed article, but it is manifestly a misprint, or mistake in the copy.

section, with one-fourth of the same cut away in forming bolt holes, leaving only three square inches in the weakest parts. The truss, moreover, I suppose to have had a depth equal to about one-tenth the length of span; and for such a length and depth of truss, for a single track railroad bridge, I should have put in at least ten square inches of cross section of wrought iron, in the middle of the lower chord, with other parts similarly proportioned with regard to the stress they were liable to.

Now I suspect that the lower chord in the neighborhood of the centre was the part that first gave way, in consequence of being too small. If it was not so, it only proves that there were other parts still weaker than that, to which I had never given attention. My attention was turned to that point, because that struck me as the most defective in proportions, and the most easily demonstrated to be so, and having established that point to my own satisfaction, I did not feel interested to go into further detail.

The cause of the failure, therefore, I conclude to be the bad proportions of the structure, and weakness, i. e., want of proper size, in some of the parts, defects noticed and frequently spoken of by me, (in relation to other bridges on the same plan) years ago; that the accident affords no just grounds of apprehension from iron bridges properly proportioned and constructed, nor of discouragement from the introduction of such bridges on railroads.

Now the most important practical lesson taught by the sad catastrophe which gave occasion to this article, as it appears to me, is that a better understanding of the mechanical principles involved in the construction of bridges should prevail among engineers, and those having charge of such works, and that no structures of the kind, either of wood or iron, should be adopted or admitted, unless scientifically and systematically planned and proportioned throughout.

Since writing the above I have seen the resolution of the directors of that road for the *disuse* of iron bridges upon their road in future, and for the removal of two small bridges built by me near Binghamton.

The measure may be one of policy or expediency for the company, as the public is liable to reason from the failure of one *iron bridge* that all iron bridges are unsafe, however differently planned and proportioned. But if any confidence can be placed in the preceding statements, the folly of taking the failure here spoken of as any evidence of unsafety in those remaining will be sufficiently apparent.

It would seem that this summary condemnation of iron bridges by the directors of the New York and Erie railroad company is founded on the fact that an iron bridge may "break suddenly and without any previous warning." Did it occur to them that many of the bridges considered as wooden bridges depend for their support on iron bolts and fastenings, which are equally liable to "break suddenly, without warning;" and that their breaking would be equally as fatal to the structures of which they compose parts as the breakage of a corresponding part of an iron bridge.

Look at the Howe bridges, on one of the most popular plans now in use for railroad bridges in this country. Think of a bridge of 150 feet stretch, with some 9-10 of the structure, and all but 1-15 part of the load (and a railroad bridge should be able to bear with safety a load of 2,000 lbs. to each running foot) suspended by 8 iron bolts of 1½ inches in diameter, and this cut down by screw threads to a trifle over 1½ inches diameter, leaving not to exceed 15 square inches to sustain the whole weight.

Now, 9-10 of such a structure could not weigh less than 100,000 lbs. which, added to 280,000 for the 1-15 of the maximum load, gives 380,000 lbs. to be sustained by 15 square inches of wrought iron; showing 25,333 lbs. to the square inch as the average stress upon all of that set of 8 bolts; and those bolts, being in pairs, one pair in each corner of the bridge, are in no wise certain of sustaining the same stress, and the breakage of any one of them would suddenly throw such a stress upon its fellow as would be almost certain to break it and cause the immediate downfall of the bridge.

Then look at those doomed iron bridges built by me at Binghamton, in which no man can point

out an important piece of wrought iron which, under a load of 2,000 lbs. to the running foot can be demonstrated to sustain a tension exceeding 10,000 lbs. to the square inch of cross section, or any other part more severely taxed, in proportion to its safe capacity. Having duly contemplated this picture and that, let us pause for a moment, and admire the wisdom, or commiserate the ignorance, of those who tremble at crossing the iron bridge, while they feel fully at ease in passing over the so-called wooden structure, whose stability depends on the same kind of material, exposed to double, and almost treble the stress which it sustains in the other structure.

S. WHIPPLE.

Utica, August 7th, 1850.

Oxygen.

Continued from page 563.

First on our list are the cotemporaries, Robert Boyle and Dr. Hooke; both celebrated for their love of truth, but, in nearly every other respect, differing as widely as possible. Boyle was the attractive, elegant and insinuating Irish gentleman. Hooke, the cool, cautious, and sarcastic observer. Boyle found ready panegyrists for all his acts, and one of his admirers has forever immortalized his own lucubration by commencing with the memorable sentence, "Robert Boyle, the father of chemistry and brother to the Earl of Cork"—thus making his lordship *uncle* to chemistry; a case of nepotism without a parallel. Hooke was less fortunate, if fortune is to be reckoned by the amount of written praise, for one of this acquaintance thus speaks of him: "He is very crazy, much concerned for fear he should outlive his estate. He hath starved one old woman already, and, I believe, he will endanger himself to save sixpence for anything he wants." The same friend (?) writing after Hooke's decease says: "I wonder old Dr. Hooke did not choose rather to leave his £12,000 to continue what he had promoted and studied all the days of his life, I mean mathematical experiments, than to have it to go to those whom he never saw or cared for. It is rare virtuosos die rich, and it is a pity they should if they were like him."

Boyle was born in Ireland in 1627, and died in London in 1691. He repeated Le Brun's experiment of the calcination of tin; and finding that the calyx could not be formed without the assistance of heat, and apparently not noticing that air was also necessary, he adopted the idea that calces were the compounds of heat with the respective metals; the increase of weight being due to the fixation of that amount of heat.* That Boyle should have neglected the action of air is especially remarkable, because he was the first to introduce the air pump into England, and by its aid experimented upon the utility of air in ordinary combustion. He found that gunpowder, in the exhausted receiver, could be ignited by a burning glass, whereas other combustibles would not inflame; and hence he concluded, that the nitre contained in the powder was concerned in furnishing materials, now known to be oxygen, to supply the place of air.

Dr. Hooke was born 1635, and died 1702. His experimental researches are not his only claims upon posterity, for the inculcation of the sentiments expressed in the following brief quotations from his works, will always demand respect. In his preface to the "Micrographia," he thus warns the lovers of hypothetical speculation: "In this investigation, upon which the desirable reform in philosophy is to be founded, there is not so much required any strength of imagination, as a sincere hand and faithful eye, to examine and record the things themselves as they really appear."—"The science of nature has been too long made the work of the brain and of the fancy; let it now revert to plain and sound observation; let there be rigor in admitting, strictness in comparing, slowness in debating, and shyness in determining." The understanding "must watch the irregularity of the senses, but not go before them, or prevent their informa-

* If it be said that heat and phlogiston are here synonymous, it must be remarked, that if it be so, then Boyle must have reversed the phlogiston theory: he says, metals during calcination combine with heat (phlogiston?); the theorists said, by calcination a body became dephlogisticated, i. e., was deprived of phlogiston (heat?).

tion; it must examine, range, and dispose of the bank which is laid up in the memory; but it must be sure to make distinction between the sober and well collected heap, and the extravagant ideas and mistaken images which there it may sometimes light upon." Speaking of himself, he says, in the true spirit of a philosopher, i. e., a lover of wisdom.

"If ever I have ventured at small conjectures respecting the causes of the things I have observed, I beseech the reader to look upon them only as doubtful problems and uncertain guesses, not as unquestionable conclusions, or matters of unfutable science." We could almost wish to possess the fabled powers of some eastern potentates; we would first cause this sentence to be written in letters of gold, and then would issue an unalterable decree, compelling its hourly repetition by all speculative philosophers, under pain of instant destruction of their unread productions. In the sixteenth section of the same work, he notices the necessity of the presence of air in common combustion. In its absence, wood is converted into charcoal, which glows but does not burn. He argues that air is the universal solvent of combustible bodies. The term "solvent" being employed, we suppose, in the same sense as applied to air when it is said to dissolve water by evaporation; that is, in a state of very intimate mechanical mixture or adhesion, and not in that still closer connection which is now conceived as chemical combination: for all chemical operations, such as the formation of salts and alloys were generally explained mechanically, and were even definitely assigned to the peculiar effects of certain arrangements of hooks and eyes, clefts and wedges, and similar contrivances. Hooke, in further illustration of this solvent power, says, that it is exercised only by a small proportion of air, which is like unto, or the *very same*, as that which is fixed in saltpetre, oxygen; and hence the atmosphere is like those spirits (spirits then signified many things besides alcoholic liquids, thus the acid solvents of the metals were termed spirits, as, spirits of salt and of nitre, substances now known as hydrochloric and nitric acids, etc.) which have much phlegm, impurity, in them, and soon become glutted, whereas saltpetre abounds more in those solvent particles, and hence a little will dissolve a great sulphureous body quickly and violently; and as other weak solvents will quickly consume the dissoluble body if applied in sufficient quantity, so air applied to a combustible, by a draft or by bellows, will dissolve it as rapidly as saltpetre.—Whence, he concludes, there is no element of fire, but that flame is the result of the mutual agency of the combustible and part of the atmosphere. He also particularly alludes to the use of air in respiration, but does not appear to have followed up these investigations. In a later work, "Lampas," 1677, he explains, in a very beautiful manner, the phenomenon of the flame of a candle; and by holding in it a thin piece of glass or mica, he observed its section, and showed that the interior is not luminous. Hooke's doctrines were also independently illustrated by John Mayow, born in Cornwall, 1645, died in London 1679. At least Mayow never names Dr. Hooke, and we must, therefore, in the absence of proof to the contrary, charitably suppose that he was unaware of Hooke's labors.—Mayow's views on respiration are particularly remarkable as being the first which are worth reviewing. He experimented by placing a burning candle and a living mouse under similar bell glasses, and noting the duration of flame and life thus situated. He then placed a candle and mouse together under the same bell glass, and found that life and flame were extinct in a proportionally shorter interval of time. He also varied the experiment by endeavoring to burn a candle in air spoiled by breathing, and to support life in air vitiated by combustion. Failing in both instances to maintain either flame or life, he concluded "that the nitro-aerial particles are absorbed both by the candle and by the animal." The then prevailing theory ascribed to respiration the property of cooling the blood; but having observed the necessity of the "fire-air" particles in ordinary combustion, he considered their absorption as necessarily connected with the heat of the blood.

Dr. Stephen Hales, born in Kent 1677, died at Teddington 1761, may be said to be the first who fairly laid the foundation of pneumatic chemistry,

the chemistry of the gases. Mayow and others hewed and dressed many stones, but Hales laid the foundation, and Priestley afterwards raised the scaffold, and devised implements for future use.—The building is still unfinished, and honest hard-working laborers are in request; we might venture to say there are also good openings for good architects.

Hales' experiments are exceedingly curious, and his conduct well exemplifies the danger of a strong adherence to a mere theory. He had started with the idea that all gases were only so many modifications of common air, and though he actually procured hydrogen, coal gas, oxygen, and carbonic acid gas, as well as many others, yet he contented himself by measuring their quantities, and took no heed of their remarkable and distinctive properties. He also observed that calcined tartar, containing much caustic potash, partially purified air that had been spoiled by breathing; but instead of detecting its specific action, its combining with the carbonic acid gas, he confounded it with the mere absorbing powers of some other kinds of salts. In fact, no man was ever nearer the discovery of important truths, and so willfully neglected his opportunities. A fatality appears to have attached itself to all he did. It was the fatality of seeking facts to establish a theory, instead of contentedly accepting facts for their own sake, until they should embody forth their own theory of truth.—It was the dog and the shadow—hypothesis against induction; and we are almost led to believe that Hales must have originated the saying, which has been, perhaps, rather too vain-gloriously generally ascribed to a foreigner—"If facts do not agree with my theory—why, so much the worse for the facts."

To be continued.

SUBMARINE TELEGRAPH.

The Submarine Telegraph between Dover and Calais was laid during the last week of August, and England is now connected with the continent telegraphically. The operation of laying the wires was performed by the aid of a steamer. Between the paddle wheels, in the centre of the vessel, was a gigantic drum, or wheel, nearly fifteen feet long, and seven feet in diameter, weighing seven tons, and fixed on a strong frame work. Upon it, was coiled up, in careful, close convolutions, about 30 miles of telegraphic wire, one tenth of an inch in diameter, encased in a covering of gutta percha, the thickness of a little finger. The point proposed to be reached—Cape Grinez—the nearest land mark to the English coast, and between Calais and Bologne, is a distance of 21 miles, so that a surplus supply of nine miles of wire was held in reserve for the purpose of slackening. The route was marked by a series of pilot buoys. The vessel steamed out at the rate of three or four miles an hour into the open sea, in a direct track for Cape Grinez. The operation of paying out the 30 miles of wire commenced on a signal to the sailors to "go ahead with the wheel, and pay out the wire," which was continuously streamed out over a roller at the stern of the vessel, the men, at every 16th of a mile, being busily engaged in riveting on to the wire square leaden clamps or weights of from 14 to 24 lbs., which had the effect of sinking the wire in the bottom of the sea, which, on the English coast, commences at a depth of 30 feet, and goes on varying from that to 100 and 180 feet. The whole of the casting out and sinking was accomplished with great precision and success, owing to the favorable state of the day. This is the most extensive experiment yet made in carrying the telegraph under water.

COAL BANK.

The Chattanooga Advertiser, of the 4th instant, says: Col. Jas. Vaughn, of Monroe county, called at our office on Monday last, and informed us that he had recently opened a fine vein of bituminous stone coal in Roane county, about three fourths of a mile from Joseph Kimbrough's, and three miles from the Tennessee river. The vein is about 17 feet wide by 12 in thickness. He is taking about 100 bushels per day to each hand engaged. Col. Vaughn has a contract with Cooper and Wiley, of Cass county, Georgia, by which he expects to lay down at our landing 2,000 bushels of coal a week.

STAITE'S ELECTRIC LIGHT.

Mr. Staite exhibited his electric light from the light house on the South pier, Sunderland, on Monday evening last. He was invited by the commissioners of the river Wear, in order, it found suitable, that it might be adopted as the permanent means of illuminating the new dock. Towards evening thousands thronged the quays and piers; and many took trips to sea to witness the effect of the light several miles from the land. The apparatus was erected upon a temporary platform raised a few feet above the light house, on the South pier—the galvanic battery being placed in a shed below. We learn by the Sunderland Herald that at ten o'clock exactly the anxious spectators were gratified by the first glimpse of light, which was shown by a parabolic reflector. It was first directed towards Hartlepool, Seaham and Ryhope, and then brought gradually northward, by the reflector being moved slowly round—all the while, however, the beams falling inland.

The light was then sent successively upon the docks, St. John's Chapel, the quays, piers, and then toward Roker and Whitburn. On all these places a bright stream of light was thrown with a marked effect; and at times the brilliancy was such that persons were obliged to desist gazing upon the light house. At the farthest end of the piers the illumination was so great that one individual could distinguish the features of another at a considerable distance—in fact, the pier, from end to end, had the appearance of a fine promenade, splendidly lighted up. When directed toward a vessel which happened to be entering the harbor, it rendered every object on deck clearly visible; and any one possessing an ordinary power of vision could easily make out the smallest print.

At Ryhope, three miles off, a lady was enabled to read a letter which she had never opened; and at Whitburn, two miles distant, in an opposite direction, the Herald was read on the sands by several individuals, when the reflector was in such a position as to cast a beam of light in that direction. The iron bridge which crosses the river Wear, three quarters of a mile from the pier, was crowded; and indeed almost everywhere that it was known the light was to be exhibited, parties were eager to obtain a glimpse of it. At half past ten o'clock the commissioners proceeded out to sea, a distance of seven miles, in the Sea Horse steamer, at which distance the pier light was invisible; while the electric light shone clear, bright and exultant as ever; and a captain might have brought his chart on deck and consulted it with ease.

The following letter received by Mr. Meik from Mr. Reid, harbor master at Seaham, seven miles off, shows how it was distinguished there: "I was favored with your note yesterday, with the information that the electric light would be shown at Sunderland last evening, and I beg to express my best acknowledgements for it. I observed the light burst out with great splendor at about the time appointed, and it continued with varied intensity until 11:25, when it suddenly increased both its apparent size and intensity to a light of surpassing splendor, reducing the other lights near as seen from Seaham North pier to the veriest sparks." We understand that the commissioners expressed their decided unanimity on the complete success of the experiment.

Lead for Statuary Purposes.

An Edinburgh correspondent of the Athenæum very justly urges the advantages to be gained by the adoption of lead in statuary work, and instances the equestrian statue of Charles the Second, erected in Parliament Square by the magistrates of the city, in honor of the Restoration, and undoubtedly the finest piece of statuary in Edinburgh, as a fair example of the "capabilities of the material." Many who hear of the proposal for the first time, will smile at the idea of applying so soft a material as lead for an office which bronze and granite usually fill, and indeed many even of the Edinburgh residents are ignorant of its successful employment in the work to which we have alluded. That it is really lead, has been ascertained beyond a doubt, as a few years ago the horse's shoulder sank, owing to the failure of one of the iron supports, when the statue was taken down, the sunk parts beaten out, and new supports put in, with a filling-

up composition, making it as good as ever. Seeing this acknowledged to be superior to any other bronze or marble statues which adorn the city—and Edinburgh possesses a goodly number, from the hands of the most eminent masters—it must be admitted that the qualifications of lead have been strangely overlooked by the modeller. As regards durability, King Charles has stood 165 years, and yet retains its original excellence.

Alleged Propulsion of a Vessel by Steam in the Year 1543.

T. Gonzales, Director of the Royal Archives of Simancas in Spain, published in 1826 an account of an invention by Biasco de Garay, a naval captain, who, it is stated, exhibited in Spain, in 1543, an engine, by which ships of the largest size could be propelled in a calm without the aid of oars or sails. He made an experiment before the commissioners, appointed for the purpose of examining his invention at Barcelona, on the 17th June, 1543, the vessel used being a ship of 200 tons. Garay, we are informed, wished to keep his mechanism a secret; but it was observed to consist partly of a large caldron or vessel of boiling water, and of two moveable wheels, on one side of the ship. The experiment succeeded so far, that the vessel was propelled at the rate of two leagues in three hours; and the inventor was rewarded by receiving a sum of 200,000 maravedis, besides having his expenses defrayed from the public treasury. It is added, that the invention would have been further encouraged had not state expeditions of great consequence claimed the immediate attention of the emperor.—But it is important to mention, that the authenticity of the entire history of Gara's invention, as published by Gonzales, has been called into question, and that no practical results of any utility followed. —*Frazer's Magazine.*

Railroad Letting.

On Tuesday last the grading, bridging and tunnelling of about twenty miles of the Covington and Lexington railroad were placed under contract.—Some two hundred bids were put in. We understand the contracts were made on terms favorable to the company. The cost will not exceed the engineer's estimate, and the contractors take \$55,000 in the stock of the company. Active operations will be commenced immediately.—*Covington Journal.*

Valuable Invention.

Letters have recently been issued from the Patent Office at Washington, to Mr. E. G. Pomeroy of St. Louis, for an invention by which he professes to coat iron with copper so as to fit it for many useful purposes to which it is now suited. By Mr. P's process, which is described as simple and cheap—the iron is first immersed in sulphuric acid, or some other acid, to remove all impurities from the surface. When dry, it is dipped into clay sufficiently moistened, to leave a thin coating on the iron. It is again dried over a brisk fire, and then immersed several times into molten copper.—Enough of the copper adheres to the iron, it is said, to cover the surface completely, after which it may be passed through rollers to reduce it to the required thickness, and the result is a smooth surface, fully equal in brightness to pure copper or brass. The coating is perfect, and appears not simply to adhere to the iron, in a thin layer, but to be completely amalgamated with it so that on hammering it the coating does not separate, but remains as firm and durable as the iron itself.

The editor of the St. Louis Intelligencer, who has seen some samples of iron coated by this process, speaks of the matter as follows:

"If this invention is what it purports to be and what we believe it is, it will be found useful in an infinite variety of forms; in the sheathing of vessels—the roofing of houses—in steam boilers and chimneys—and a great variety of other things. In the single article of spikes and bolts, and other fastenings for ships and vessels, the saving will be

enormous. Iron spikes and bolts are much better and stronger than copper. Coated by this process, they will resist the action of salt water, and gallic acid of the wood, as perfectly, will be much better in other respects, and will not cost half as much.

In truth we can perceive no reason why iron should not supersede copper in almost all the uses to which it is applied, if this invention be what it is claimed to be.

Pennsylvania.

Many of the leading public works of this State have received very severe injuries from the recent disastrous freshet with which they have been visited. The Reading railroad has been repaired, and commenced the transportation of coal on Monday last. The Schuylkill Canal will not probably be opened again for this season. This company have raised \$200,000 for repairs, and is now actively engaged in making them. The Lehigh Canal will not be opened, it is now stated, till some time in October—probably the latter part. The Delaware and Hudson Canal was not very severely injured, and is again in operation. All the local coal roads are more or less injured. Some will soon be at work again, while others will require the rest of the season to put them in order.

Independent of the losses to the owners of these works, the influence which the interruptions to their regular operations thus caused, will have upon the price of coal, is a matter of great interest to our whole community, which draws so large a part of its fuel from Pennsylvania. It shows how important are the coal fields and public works of that State to our comfort and prosperity. The suspension of business on these works for a period of six months, would produce a general bankruptcy. The whole machinery of business would stop with the loss of our motive power. Next to the failure of food, in importance, is that of fuel.

In relation to the probable amount of supply of coal for the rest of the season, we copy the following from the Pottsville Journal:

For the information of our readers abroad, we give the following as the probable state of the coal trade for this year.

The supply from the Lehigh will be short this year about.....220,000 tons.
Lackawana.....100,000 "
Wilkes-barre, Pinegrove, &c.....50,000 "

Tons.....370,000 "

Making the supply this year fall short of the supply of last year 370,000 tons, without taking into consideration the Schuylkill region. Add to this 200,000 tons for the increase in the consumption for the year, which is a very moderate estimate, and the deficiency of coal in the market this year will exceed half a million tons.

The supply from the Schuylkill region is now nearly the same as last year to the same period.—The railroad and canal last year sent to market from September 14th, to December 1st,

1849.....461,961 tons.
In December, 1849.....89,357 "

Total tons.....551,288 "

Should the Reading railroad company obtain additional facilities, and no further interruptions take place, or the snow storms in November and December not prove too numerous they can transport this quantity to market the balance of the year.—Should the supply fall short of the quantity named from this region, it would increase the deficiency.

Our operators at present hold white ash coal at \$2 50, and red ash at \$2 75 per ton. These rates, under existing circumstances, are reasonable, and will hardly remunerate them for the losses they

have sustained. Our impression is that these prices will be more likely to advance than recede. It is the determination of the operators here, who have wharves at Richmond, to purchase all the coal they can ship from their wharves, and thus prevent the middle men at Philadelphia, who have no interest in Schuylkill county, from depressing prices. This course is rendered necessary for self preservation, and we hope that all those who have no shipping facilities, will make the effort to dispose of their coal to those first, before trying elsewhere; and under no circumstances sell to the middle men below, for a less price than to the operators here who are engaged in mining. Such a course will not only secure good prices for the season, but will remedy many of the evils hereafter under which the trade has been laboring for the last eighteen months.

Both the Lehigh and Lackawana companies refuse to take any further orders. They cannot supply their present contractors—and all the coal the former region can furnish this year will be absorbed by the iron works on the line, and the line trade. It is doubtful whether a ton will reach tide this season.

The large prospective business thus thrown upon the Reading road, has given that stock a great impulse in the market, and with the largely increasing receipts, it will probably go to a much higher point than it has reached for years.

Connecticut.

The annual meeting of the stockholders of the New Haven and Hartford railroad company was held at Hartford on Tuesday. The report of the directors exhibit the affairs in a very prosperous state.

The income for the year ending August 31, 1850, was\$490,931 45
The expenditures for the same period were.....234,475 80

Balance for net receipts.....\$256,455 65
For the year ending September, 1847, the receipts amounted to.....\$267,814 32
For the year ending Sept., 1848.....344,762 87
Increase.....\$76,948 55
For the year ending Sept. 1, 1849.....373,970 04
Increase.....\$29,207 17
For the year ending Sept. 1, 1850.....450,757 63
Increase.....\$76,787 67

The whole number of passengers transported on the road the current year was 386,876, being an increase over the last year of 66,129. The total number of miles run by the passenger and freight trains is 216,300. The directors have declared a semi-annual dividend of five per cent., payable on the 1st of October; and a vote was passed by the stockholders declaring it expedient that the directors should, within the ensuing six months, declare an extra dividend of not less than five per cent. to be paid in cash or stock, at their discretion. There is an apparent surplus of earnings of \$200,000, which is now invested in construction account—tracks, deposits, steamboats, etc.; but nearly half of this will be absorbed by depreciation, etc., leaving 100,000 clear surplus, which it is the design of this vote to have represented by the issue of new shares and divided among the stockholders either in cash or stock, as the directors shall deem expedient. There was little or no opposition to the vote as it finally passed.

The grading for the double track between Berlin and Meriden is nearly completed, and the track will soon be brought into use. The sum of \$187,251 has been expended in the construction of the branch road to Middletown. Of this amount \$100 were subscribed by the citizens of that place. So far as completed it was opened in March last, and the amount of business contributed by it to the main line has been satisfactory. A proposition to offer to the present stockholders of the 7 per cent. bonds of the corporation, which have three years more to run, 6 per cent. bonds payable in ten years, in exchange, was voted down, after some discussion.

The following gentlemen were chosen directors for the ensuing year, viz:

Charles F. Pond and Charles Boswell, of Hartford; Elisha Peck and Cornelius Vanderbilt, New York; Chester W. Chapin, Springfield; James S. Brooks, Meriden; Frederick R. Griffin, Guilford; Ezra C. Reed, New Haven; Ebenezer Jackson, Middletown.

Indiana.

The business of the Wabash and Erie Canal shows the same evidences of prosperity as the other great lines of communication throughout the country.

The tolls of Canal, of Indiana, for the month of August, were.....\$21,023 48
The tolls for August, 1849.....8,777 55

Increase.....\$12,245 43
The tolls to 1st Sept. 1848 were.....\$85,437 60
" " 1st Sept. 1849 were.....97,090 48
" " 1st Sept. 1850 were.....106,514 95

We have received the following important information in regard to this work:—

The Trustees, on the 6th instant, closed a contract for the completion of the Evansville division of the canal, at fair prices, with Samuel Forrer, Solomon Sturges, and S. R. Hosmer, of Ohio.—The work is to be commenced within thirty days, and finished by the 1st day of November, 1852.—This division, from Petersburg to Evansville, on the Ohio river, (54 miles in length) embraces 35 miles of heavy and expensive excavations and embankments. The line to Petersburg was put under contract some time since, and the work is in a forward state. The Evansville division was the last to finish the entire canal to the Ohio river.—The contractors agree to take the obligations of the Trustees, payable at such dates after the work is completed as will enable them to meet the payments out of the tolls of the canal and the sale of lands, without inconvenience. The high character of the contractors, and their abundant responsibility and great experience, place the completion of this work, according to the terms of the contract, beyond a question. Thus, we may look at an early day to the completion of this great canal, which traverses a region of country unsurpassed in fertility, by any other portion of the Mississippi valley. This contract is understood to be a highly advantageous one to the trust, and creditable to the energy and business tact of Messrs. Charles Butler, A. W. Puett, and Thomas Dowling, the Trustees. The canal is now finished and navigable from Lake Erie to Point Commerce, 42 miles south of Terre Haute.

Wilmington and Manchester Railroad.

For the purpose of showing the present condition of this road, we copy the following extract from a letter of Gen. Harlee, President of the above road, to a gentleman at Cheraw, S. C., which latter place it is proposed to connect with the above road by a branch.

MARION C. H., August 23, 1850.

JAMES POWELL, Esq.,

Dear Sir: As all contingency is now fairly at an end, as to the construction of our railroad to the Great Pee Dee, I would suggest that you would consult with the Commissioners at Cheraw, as to the propriety of moving in opening the books for the stock of the company to connect a road with your place.

We have under contract, with a few trifling exceptions, all the road from the Pee Dee to Manchester, including grading, timber, truss work, etc., and will commence laying the iron in January next at the western end. We have purchased 3000 tons as you are aware for the first 40 miles, and are now engaged in negotiations for the remainder to reach the Pee Dee river, which I think will be consummated in a few weeks, and hope to take the next crop from the Pee Dee country.

All of the grading in this State east of the Pee Dee is in progress, and a portion of the timber contracted for, and arrangements have been made to put the whole of the contracts not heretofore let for grading and timber in North Carolina, under way

by 1st October next, and all that we require is the means to purchase iron, etc., for that portion lying between the Great Pee Dee and Wilmington. For this we have no apprehension; with two thirds of our capital paid in and expended, we can have no difficulty in negotiating our bonds for the rest on fair terms, even if North Carolina does nothing; but it is confidently relied upon, that her next legislature will either subscribe or guarantee for the company from \$200,000 to \$300,000.

I have now an offer of iron for half cash and half credit, for ten years, for our bonds alone at a fair price.

There can, therefore, be no uncertainty as to the ultimate completion of our road, or as to its business; and the question is, is it of sufficient importance to your people, to make an investment to the amount required to secure a road from Cheraw to join it. I need not, I am sure say anything to you on this point. My object is to point out the propriety of beginning at once, if you intend undertaking it. The times are now prosperous, and the road can be built by an appropriation of such a portion of the means of those interested, as will effect them. Thus far, our contractors have paid up and gone on with the work, without any diminution of their usual crops; and although \$100,000 worth of work or more has been completed, the loss of labor from other pursuits has not been felt, nor will that which is yet to be bestowed upon the work.

Pennsylvania.

The Union Canal.—During the year 1849, the total tonnage on the Union Canal amounted to 148,332 tons—of which the item of anthracite coal amounted to 75,527 tons. The report of the managers of the company gives a very flattering account of the condition of their affairs. The tolls received for the past season, amounted to \$86,799 89, the tonnage 148,332 tons. The transportation of coal from Pine Grove has increased, and was larger last year than in any former one. 78,209 tons were mined and transported over the railroad; 72,156 tons of this were shipped from Pine Grove, of which 28,111 tons passed out of the canal at Portsmouth; the remainder, 44,045 tons, having been consumed on the line of the canal, principally at Lebanon. The coal trade from this canal which passed out at Portsmouth has increased but 2590 tons the last year, that of the other Susquehanna regions has increased during the same time, 44,120 tons—the whole amount of it exceeding 300,000 tons. This trade is constantly on the advance, from the erection of new iron works on the Susquehanna below Portsmouth, and from a new outlet at Delaware city by way of the Tide Water and Chesapeake and Delaware Canals. Much of this trade could be secured for the canal, were the capacity sufficient for sixty to eighty ton boats. The capital on the first of January, consisted of 1,517, old shares of \$200 each \$309,400 00
48,418 new shares of \$50 each 2,420,900 00
Fractions amounting to 14,628 25

Total \$2,744,928 15

The Pennsylvania Railroad—Philadelphia and Pittsburgh.—From and after the 16th of this month the Pennsylvania railroad company will run their cars from Philadelphia to the intersection of their road with the Portage railroad. This makes a continuous line of railroad from Philadelphia to Johnstown, a distance of two hundred and eighty miles. From Johnstown to Pittsburgh, passengers can have the choice of canal boats or stage coaches, as may suit their taste or convenience. The time to Philadelphia will be about thirty-three hours, by taking the stage to Johnstown, and about forty hours by taking the canal. These facilities must greatly increase the travel through Pittsburgh this fall and winter.—*Pittsburgh Gaz.*

Canada.

The people of Quebec are moving in the construction of a line of railroad to intersect the St. Lawrence at Richmond. A large meeting was recently held in that city, composed of its richest and most influential citizens, at which, among others, the following resolutions were passed:

Resolved, That in the opinion of this meeting, it is absolutely necessary (to avoid remaining in an isolated position, and as it were excluded from all participation in the trade and prosperity of the other portions of North America,) forthwith to obtain a safe and rapid means of communication, at all seasons of the year, with the seaboard, and for the purpose of attaining this end, to direct all our efforts and energy, and all our resources, immediately to commence constructing the contemplated railroad from Quebec to Richmond, there to connect with the Atlantic and the St. Lawrence railway.

That it is the duty of the corporation of the city of Quebec, in accordance with the example of the provincial government, and of the cities of Montreal, Toronto and Hamilton, to aid the construction of a work from which the city will derive so much benefit, by issuing debentures to the same amount and on the same conditions as those issued by the corporation of Montreal in aid of the St. Lawrence and Atlantic railroad; and that it is the decided opinion of this meeting that upon this aid depends the success of the enterprise.

The meeting was presided over by the Mayor, and was addressed by the Hon. Mr. Caron, Mr. Chanveau, Mr. J. B. Forsyth, Mr. Lloyd, Mr. Chabot, Mr. Cauchon, Mr. D. Ross, Mr. Lemieux, Mr. Macdonald, Dr. Painchaud, Mr. Rheume, Mr. Angers and Hon. W. Walther. We should judge from the tenor of the speeches, that feeling in favor of this project was very strong. From its importance to Quebec, from the connection it will open with the lower British provinces, the ease with which the road can be built, and the shortness of the line, we entertain no doubt of its construction.

Champlain and St. Lawrence Railroad.—We learn that the Champlain and St. Lawrence railroad have given out the contract for the extension of their line. The contractor is to be paid 502 shares, of £50 each, being £25,100, and the balance, £46,000, he will receive in the shape of bonds, payable in 1860. The company pay for the lands, which it is estimated will cost £5,000.

Illinois.

Central Railroad.—William S. Waite, Esq., President of the Illinois section of the Central railroad, from Terre Haute to St. Louis, recently visited our city, on business connected with the organization of the corps of engineers, and the location of the road. While here, we understand, he examined our roads being constructed, and was highly pleased with the system of connection by the union track, of the different lines, as well as with the permanent manner of the construction of our heavy iron roads. He speaks with entire confidence of the construction of the road through Illinois, at an early day. He says the people on the route, as well as the citizens of St. Louis, are alive to the importance of the work. The engineers, we learn, are now actively engaged in the field locating the road. With the construction of this road, the Terre Haute road, and the Bellefontaine road, we will have a direct and continuous line through Illinois and Indiana, to the Ohio line, there to intersect the Pittsburgh, Cleveland, Sandusky, Columbus, and Dayton lines. When this great central line shall be completed as it most certainly will be in a few years, the greatest facilities will be afforded to the traveller, as well as to those transporting merchandise and produce between the east and west.—*Ind. State Sentinel.*

Indiana.

Lawrenceburg and Upper Mississippi Railroad Company.—The following persons have been chosen directors of this road for the present year:—George H. Dunn, Walter Hayes, David Nevitt, James B. Toley, James Hamilton, Edward Marshall, A. R. Forsythe, Joseph Winterode, and T. Summan.

A statement of the condition of the company shows that at the date of the last report made in March, that stock stood at \$283,000.

Added since:—

City of Lawrenceburg subscription.....	\$15,000
Real estate subscription.....	37,363
Stock to be taken in new contracts.....	7,000
Cash stock.....	11,500
	70,863
Stock applicable to the Shelbyville branch.....	25,000
Stock payable in lumber.....	6,000
	\$384,863

In March last there were under contract... 20 miles.
Since let out..... 14

Total under contract now 34
Estimated cost of grading..... \$133,000
Amount of work now paid for..... 50,000

Twenty-two miles will be ready to receive the superstructure and the residue to Greensburg by the fall following, and probably some portions of all the branches to Columbus and Shelbyville.

Ohio.

Belpre and Cincinnati Railroad.—The directors of this railroad company were in session at Frankfort yesterday. We understand that the connection with the Cincinnati and Hillsborough road, at the latter place, were agreed upon, under certain conditions to be complied with by the latter. An engineer has been employed, and will be in the field by the 1st of October; and before spring, it is supposed, a portion of the road between this city and Hillsborough will be placed under contract.—*Chillicothe Metropolis.*

Ohio.

Cleveland, Norwalk and Toledo Railroad.—The friends of this important line, which is designed to connect the railroads of Ohio with the Michigan Southern at Toledo, are making good progress in providing the means for its construction. The line leaves the Cleveland and Columbus railroad at Wellington, in Loraine county, and will run thro' Norwalk, Bellevue, Fremont, and probably thro' Perrysburgh and Monroe city, to Toledo. In Huron county \$100,000 has been subscribed to this work. This sum will probably be raised to \$120,000. In addition to this, the county is expected to subscribe \$100,000 more. Sandusky county is also expected to subscribe as much more, and furnish an additional individual subscription of \$25,000. Perrysburgh and Maumee will subscribe \$100,000, should the road pass through these towns, as it probably will. Toledo will probably subscribe \$50,000 in her corporate capacity in addition to those made by individuals. The route is well adapted for a railroad, and is far enough from the lake shore to avoid the deep ravines and water courses which intersect the country on the lake shore. With the above, the construction of every link in the great chain of railroads from the Atlantic to the Mississippi is secured, and the whole line will probably be completed in about two years. It is fortunate that it is in the hands of numerous companies, each of which is busily engaged upon its appropriate section. This brings to the whole line not only a much larger amount of means, but also a much larger aggregate of business and engineering

skill and ability than if it were under one head.—All engaged upon the several divisions of this road are as much interested in the success of each, as if they were part owners of the whole line.

Georgia.

The business of the Western and Atlantic railroad has increased very largely this year. The passage receipts of July were one hundred per cent larger than last year, and the freight gains were very large. The receipts of the six months ending the 30th of June, were:

	1849.	1850.
Freight.....	\$48,680	\$66,119
Passengers.....	16,275	29,852
Total.....	\$64,955	\$95,971
Increase in 1850.....		\$31,016

The receipts of the Central railroad show likewise a large gain over July, 1849. The earnings are \$22,525 against \$33,160, an increase of \$10,634, or nearly 50 per cent.

The profits of the Central railroad for July, 1850, over those of July, 1849, were \$10,634 93.

The following is a comparative statement of the earnings of the Georgia railroad, in the month of August, 1849 and 1850:

	Passengers.	Freights.	Mails.
1850.....	\$29,779 10	\$10,595 46	\$17,371 47
1849.....	20,398 00	19,405 31	39,793 40
Increase.	\$7,420 92	\$187 15	\$7,608 07

Maryland.

The revenue for the month of August on the Baltimore and Ohio railroad has been as follows:

	Passengers.	Freight.
Main Stem.....	\$31,773 82	\$73,550 29
Washington Branch....	23,256 86	3,673 61
	\$55,030 68	\$77,224 90

Making an aggregate of \$105,324 11 on the Main Stem, and \$26,931 47 on the Washington Branch—the total being \$132,225 58.

The above shows an increase over the corresponding month of last year of \$12,705 59, being \$5,665 61 on the Main Stem, and \$7,042 78 on the Washington Branch.

Bridge at Rouse's Point.

The Traveller learns "that the committee of the New York Legislature, who have recently been making an examination of the premises, with a view to the question of building a bridge at Rouse's Point for the accommodation of the Vermont and Canada and Ogdensburg railroads, have come to a decision adverse to building the bridge." We do not understand that such a decision, if carried out, will prevent the road from crossing Lake Champlain, though it may cause an addition of two miles to the track.

Pennsylvania.

An unusually large meeting of citizens of Lehigh county, favorable to the construction of a railway from the Schuylkill and Lehigh coal regions to intersect the Somerville and New York railroad at Easton, was held at Allentown on Tuesday, the 3d inst. Hon. James M. Porter, President of the Delaware, Lehigh, Schuylkill and Susquehanna railway company, was called upon to address the meeting, and in the course of his remarks, briefly stated, that the books soliciting subscriptions of stock to the above road were opened at Allentown and Easton, but met with exceedingly poor encouragement, although much was said and done in support of the measure—only a few shares were subscribed in Lehigh and Northampton counties.—

Stock to the amount of \$500,000 was subscribed by several gentlemen in New York and Boston. The probable cost of the road was not more than common, ranging from 23 to 25,000 dollars a mile. The estimate from Tamaqua to Easton being \$1,500,000.

The Railway in Nova Scotia.

The Nova Scotian says that the proposed line to Portland is the engrossing topic of conversation, and the spirits of the people have already risen to a pitch commensurate with the importance of what they know and feel will prove the salvation of the Provinces.

The government of Nova Scotia has forwarded an application to the home government, asking whether, in the event of that Province pledging itself for the necessary sum to construct the railway to the borders of New Brunswick, the imperial government will endorse the credit of Nova Scotia. The Nova Scotian remarks, that there never was a document transmitted across the Atlantic which more deeply concerns the people of those provinces than the one in question.

Michigan.

Central Railroad.—For the last few days, says the Detroit Tribune of 9th inst., there has been a perfect jam of car loads of passengers going both east and west, over the Michigan Central railroad. We learn at the office of the company, that six thousand passengers were conveyed over the road during the last week. The Central road has become indeed the main artery of travel between the east and the west, and deservedly so. Over four thousand barrels of flour are brought in daily on the freight trains.

Indiana.

Lafayette and Indianapolis Railroad.—The grading of the whole line of this road is now under contract, and the directors will soon be in the market for the iron and equipment.

This road is virtually a continuation of the Madison and Indianapolis in direction of Lake Erie. Lafayette is one of the most flourishing towns in the State, and is the commercial centre of northeastern part of Indiana. The above road will open a direct communication with the Ohio river, and with Cincinnati, and open the interior of Indiana to the Erie and Wabash Canal on one side and the Ohio on the other. The line of the road traverses a very fertile portion of the State, and from its direction and connections it must always be an important *through* line. We learn that the company will probably soon be in possession of sufficient means to complete their whole road, and that it will be urged forward with all practicable dispatch.

Missouri.

The Pacific Railway.

We give this week a communication in relation to this road from a gentleman well qualified to speak in the premises. This work is now destined to occupy a very prominent position before the public, not only as a magnificent State project, but as a part of the great line to California. It is marvellous to see how rapidly this and kindred works in the west have risen in public estimation. The Pacific Railroad will soon become as familiar to the business men of New York as the Erie.

We can see no good reason why this road should not be built with all the dispatch compatible with a work of such magnitude. With the large amount of means which will be furnished by the people of Missouri, we think that there will be no difficulty

in obtaining from the east (if it should be needed) such balance as may be wanted to complete it.—There is no good reason why the railroad from St. Louis to the Kansas should not be completed as soon as the great lines now in progress from the east, shall reach that city.

North Carolina.

The receipts of the Wilmington and Raleigh railroad company for ten months, from October, 1849, to August, 1850, show an increase over the same months of the previous year, of \$74,040 15—making a monthly increase of \$7,404 40. Notwithstanding this increase may be attributed in part to cholera at the west, and there being but one steamer between New York and Charleston for some months, the Wilmington Journal is clearly of the opinion that were the Manchester road now completed, the receipts for the next ten months would be more than double what they have been during the above time.

Memorial of the New England Iron Manufacturers.

We have before us this document, presenting to Congress the condition of this branch of industry in New England. The general depressed state of the iron manufacture there is well known, and under the present rate of duties it is certain that most of the furnaces must soon go out of blast. For the better kinds of iron a few may be kept in blast, but the great majority of them must be abandoned.

The cost of making iron at a furnace on Lake Champlain is stated as follows:

Quantity of iron made from October 1st, 1847, to October 1st, 1848, 3,017 gross tons.

Amount of Stock Used.

603,400 bushels of charcoal, at 6½ cts. per bushel.....	39,220 00
6,034 tons of ore, at \$1 per ton.....	6,034 00
200 tons of clay, at \$2 per ton.....	400 00
800 tons of limestone, at \$1 per ton.....	800 00
200 tons of pigbed sand at 50 cents.....	100 00

	\$46,554 00
Cost of the above stock per ton of iron.....	\$15 43
Labor in manufacturing pig iron.....	3 00
Repairs of furnace.....	1 00
Agent, bookkeepers, managers, etc.....	1 18
Insurance and taxes.....	25
Transport to market.....	3 25
Interest on \$50,000 fixed capital, at 10 per cent.....	1 67
Wharfage, weighing, etc.....	50
Interest for one year on \$26 28, the sum the above items, being the cost of the iron in market, including six months' time given to purchasers.....	1 84
Commissions on sales.....	1 40

Cost of iron per ton..... \$29 52

The highest price offered at market is \$22 50! The furnace has 3,000 tons on hand. If the iron were sold at present prices, there would be a loss to the manufacturer of \$21,000

COST OF MAKING "SALISBURY" IRON AT CORNWALL, CONNECTICUT, IN THE VALLEY OF THE HOUSATONIC.

Amount of fixed capital, \$10,000.

Quantity of iron made in a year, the average time in blast being ten months, 1,200 gross tons.

225 bushels of charcoal, at \$7 per 100 bush.....	\$15 75
3 tons of ore, at \$4 25.....	12 75
1 ton of limestone, at \$1 50.....	50
Labor.....	3 00
General expenses, repairs, etc., estimated at.....	1 00
Interest on fixed capital.....	50
Interest on cost of iron, including 6 months' time to purchasers.....	99

\$34 49

Allowing that the above figures are correct, then the conclusion is a necessary consequence. That they are in the main, the condition of the iron manufacture in all parts of the country fully proves. The estimated amount produced in 1848 was about 800,000 tons. The consumption the same year being about 1,000,000. The consumption still increases in a much greater ratio than our population. The amount produced in 1850 is estimated at 400,000! What stronger proof of our inability to compete with the foreign maker.

The memorial is an interesting document, and argues the necessity of further protection in a very able manner. But as the arguments are of necessity similar in kind to those put forth by the iron makers of other parts of the country, we do not think it necessary to give them here at length. That experience is necessary, both as regards cheapness and quality of production, no one will deny. Till we acquire the same experience that our foreign rivals possess, we certainly cannot compete with them. We certainly cannot gain this experience unless we can continue to manufacture, with profit, for iron makers will not continue to follow a losing business for the benefit of the rest of the community. Such protection as will enable us to manufacture with profit, is absolutely indispensable to enable us in the end to compete with the foreigner.

It is a great misfortune that the effects resulting from protection are so little understood. With the great mass, protection means favoritism of a particular class. Let us look at this. Suppose that the importation of foreign iron should be prohibited, what would be the result? The price of iron would immediately rise, as the ordinary supply was cut off, and the manufacturer would realize a large profit. This profit would induce all those in the manufacture to enlarge their works, to the full extent of their ability, and would lead others to engage in the business from the expectation of a larger profit than their present business yielded. The result would be, that from this expectation, the business would be overdone, the price of iron would fall in consequence, and those who engaged in the manufacture of iron from the idea of large gains, would be compelled to relinquish it, from its very unproductiveness. This evil in the end would correct itself. Only so much capital would continue to be employed, so the manufacture of iron could be as profitably employed here as in other pursuits, and no more. If iron should continue to bring \$100 per ton, the manufacturer would be no better off than the farmer or the cotton spinner. Domestic competition would bring down the profits to a living business, just as we find it to be the case in farming or in any branch of industry. If this high price should be maintained, it would only prove the want of adaptedness of our country for the iron manufacture, but nothing as to the profits of the maker. In this country there are no checks upon the free investment of capital. It seeks the most profitable direction with the same certainty that water finds a level. When iron making yields a greater profit than farming, a portion of the farmers quit their pursuits and engage in the iron manufacture. This has been exactly what we have witnessed among ourselves within a very short time. Under a high duty, persons from every class and pursuit in the community were led to engage in iron making. Under the present depressed condition of this interest, these persons are again returning to their former pursuits. If a particular class of persons enjoyed a monopoly of the manufacture, then protection would be for the ben-

efit of this class. But every man in the United States may if he chooses engage in the iron manufacture, and there is ore and coal enough in many of the States to make an amount of iron sufficient, not only for our own use, but of the whole world. In what does protection create monopoly? It may increase the price, and enable the manufacturer to continue to produce it, but it places him in no better position than any of his neighbors.

Protection, therefore, is not monopoly. Now we hold that it is for the interest of a country to encourage the production of such articles to which she is best adapted. Such encouragement adds just so much to her strength. It is for the interest of a Frenchman that the production of wine should be encouraged; for the Englishman, iron; for the Cuban, sugar; because their respective countries are peculiarly adapted to the production of these various articles. By such encouragement all these nations become experts in their appropriate calling. Now, there is nothing to which we are better adapted to produce than iron. We have the best ores in the world, vastly superior to the English, and we have an abundance of every kind of fuel. In natural capacities for iron manufacture, we are as much before the old world as we are in our agriculture. The only reason why we cannot manufacture as cheaply is our want of experience and capital, and the high price of labor. We can acquire experience only from practice. Protection, by securing us against the foreign manufacturer, supplies the place of capital, and enables the manufacturer to pay the same price to his labor as the farmer or persons engaged in other pursuits. Experience and cheapness always go together, as domestic competition will always keep the profits of the manufacturer to a reasonable limit.

This we believe to be a correct view of the doctrine of protection. The prejudice against it as creating a monopoly is without the least foundation, and our first efforts should be to disabuse the public mind of the erroneous views which prevail.

One great argument in favor of protection is the financial question involved in it. A nation may buy beyond its means as well as the individual, and similar results follow both cases. The individual who buys beyond his means of payment, loses the control of his business, becomes embarrassed and fails. The nation is made up of the aggregate of individuals, and the experience of the individual becomes the experience of the masses. If we import more than we export, the balance must be paid in the precious metals, the loss of which, from the part they perform in the machinery of business, is sure to bring with it distress and ruin. Our commercial history is full of illustrations of this truth. The revolutions which followed vast importations of 1836-7 afford a striking example.

Why can we not manufacture as cheap as the Englishman? For the want of capital and experience, united with the high price of labor. In all other respects we are as well off. Protection will give us experience and capital. We hope never to see labor with us so ill paid as in the old countries. How much are we paying for want of this experience and capital? The railroad companies of Michigan and Illinois are paying from \$45 to \$50 per ton for iron that costs in Wales \$24 per ton. One-half of all they pay is eaten up in transportation and charges! Now there is no reason why we cannot in time manufacture the article at an advance of 50 per cent. over the Englishman. All we want is practice. The most direct way to

reduce the price is to protect our own workmen till they acquire sufficient strength to stand alone. Protection has already enabled us to manufacture some articles of first importance, nails, for instance, at a price that would defy foreign competition, without duty. So with coarse cottons. What should we now be paying for these if they had never been protected?

Still, notwithstanding all this, we do not believe that the depressed state of the iron manufacture in New England and New York is owing entirely to the want of protection. It is owing chiefly to the weakness of position. At the present day iron cannot be manufactured with profit, where the fuel costs at the rate of \$15 per ton. This one item costs more than the whole cost of English pig, and is nearly up to the cost of the make of some Pennsylvania furnaces, favorably situated. The New England manufacturers must go where fuel is cheaper. No tariff would save a great majority of the furnaces there. Domestic competition would destroy them; and if those now engaged in this business would hope to succeed, they must change the theatre of their operations to parts of the country where ore and coal are found side by side, and within convenient distance of navigable waters.

AMERICAN RAILROAD JOURNAL.

Saturday, September 21, 1850.

The completion of some of the great leading lines of railroad now in progress in various parts of the country is not only important for the convenience of travel and business, but from the influence which they will exert in securing the construction of the new lines which they will call into existence. The energies and capital of the country are now diverted to, and absorbed by, the great projects, which are designed to connect the extremes of our Union. With the exception of Boston, which may be said to have completed her system of railroads, all the principal Atlantic cities are still occupied with their unfinished projects. New York, Philadelphia and Baltimore are now engaged in pushing their appropriate lines which are to connect them with the West. When we go into the interior, we find the people of Ohio, Indiana, Illinois and Missouri tasking their energies to carry these lines to the western borders of our uninhabited territory. In the South, the Mobile and Ohio, the Alabama and Tennessee, the Memphis and Charleston, the Nashville and Chattanooga, the Virginia and Tennessee, and the roads through East Tennessee, engross almost the whole attention of people in that quarter; so that every part of the country is occupied by some magnificent project, which is to constitute the whole, or a part, of some grand trunk line which is to connect its most remote points.

These great lines are to constitute the *woof* of the great railroad web which is fast spreading over the whole country. The *filling* will be put in as soon as the first part of the process is completed. The completion of these works will relieve the attention of our people from the projects which now occupy it, and direct it, with our vastly accumulated capital, toward new schemes of less magnitude, but of no less local importance, till every section of the country capable of sustaining one, is penetrated by a railroad.

The two great lines of railroad running through New York, the Erie, and what is termed the Central, afford a good illustration of what we have stated. These run nearly parallel to each other,

for a distance of some 300 miles. For nearly the whole of this distance, the territory embraced between the two, will be intersected by cross roads, with but a small interval between them. Two are already in operation, some are in progress, and others are projected and will soon be commenced; and their construction will go on till every farmer shall enjoy within convenient distance this means of locomotion. What is true of the above roads, is equally so of other lines in other parts of the country.

Continuous lines of railroad from the Atlantic to the Mississippi are now regarded as of the first importance. New York in the summer season enjoys the advantage of a speedy and easy communication with the western shore of Lake Michigan. The advantage of this to New York can hardly be estimated. In the winter this communication is completely interrupted, and during this period the West is without any means of receiving from, or forwarding merchandise to, its best markets. In that part of the year best adapted to the transportation of its products, it is entirely without the means of doing it. The loss consequent upon this is beyond estimate.

A few years will remedy this great inconvenience. The internal commerce of the country will be carried on without interruption, and through channels the best adapted to its transit. The advantage from this will be much greater than the mere saving in expense of transportation. Every farmer and planter can hold his own produce to meet the demand. He is now compelled to forward when the rivers are navigable. The whole mass is thus thrown upon the market at the same time. The natural tendency of this is to diminish the demand, consequently the price. If the producer wishes to hold on for a rise, he is subjected to heavy expense at a distant post. With a railroad, he stores his own crop, and forwards it to market only when he can realise a fair price. The convenience of a railroad to the country merchant is equally great. When his means of communication are open only one half the year, he must lay in a sufficient stock for the balance. This involves the necessity of having a much larger capital than if he could supply all his wants at will.

The completion of the few great lines we have enumerated, will constitute an era in our material and physical progress, and will accomplish for the country at large, what the Erie canal effected for New York. In a commercial point of view it will double our present dimensions, and will give a renewed impulse to our population, such as we have witnessed in parts of New England where railroads have been longest built.

Maine.

Androscoggin Railroad.—We are happy to learn that the directors of the Androscoggin railroad have succeeded in effecting a loan of \$100,000, in anticipation of assessments, on very favorable terms. This will enable them to finish the building of their road, and put it in full operation to Livermore Falls, near Jay line, or within about fourteen miles of Farmington, the shire town in Franklin county.

Kentucky.

We learn from the Louisville Courier that the Louisville and Frankfort railroad will be completed to within about fifteen miles of Frankfort by Christmas. The rails are now placed on the road several miles this side of Lagrange, and are being laid at the rate of about a mile per week.

Missouri.

The Committee on Public Lands have reported to the House of Representatives in favor of a grant of land in aid of the *Pacific* railroad from St. Louis to the west line of Missouri. From the action of Congress in relation to the Mobile and Chicago railroad, we expect favorable action upon the report.

Ohio.

Hamilton, Eaton and Richmond Railroad.—We learn, from the most reliable authority, that the work on the Hamilton, Eaton and Richmond railway, progresses well. The contractors have a large force on the road, and intend, in a short time, to increase it largely. They have secured the connection with Richmond, and are getting new subscriptions to stock. A little aid in this city will infuse more energy into this company, and enable them, in connection with those west to Indianapolis, in a few months to open a railroad communication with that city, and the whole northwest.—*Cincinnati Gazette.*

Mobile and Ohio and Illinois Central Railroad.

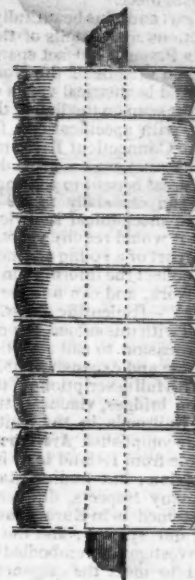
We are gratified to see that this bill, granting lands in aid of these important roads has passed Congress, and become a law. It grants alternate sections of land for the whole length of the two roads, (which is not far from 1,000 miles) provided they can be found within 15 miles of the line of the road.

This bill secures the early construction of a railroad from Lake Michigan to the Gulf of Mexico, in an almost straight line. It opens to the great lakes the shortest possible communication with the gulf, and brings the products of the tropics and of high northern latitudes within close proximity. Its line is identical with that of the direction of trade and must ever constitute one of its great channels between the extremes of the Union.

Without this grant these roads could not have been built for many years. With it their early construction is certain. They will traverse sections of the country far removed from navigable waters, which, for the want of suitable means of transportation, have attracted but little attention, and which are but thinly peopled, though of great fertility. These roads will put a new face upon the conditions of things at the south, and impart to that section the stimulant which the steam engine always administers to a people among whom it is introduced. They will give a new importance to Mobile as a seaport and make it one of the leading commercial towns of the south. The country will reap a much greater benefit from these roads than the value of the grant which has secured their construction. This great line of railroad will give to Cairo the importance of position which has been claimed for it by those who have been endeavoring to build up a city at the confluence of the Ohio and Mississippi. It will make it the entrepot of trade for Southern Illinois, and the shipping port in the winter for the produce of that great State.—It will be the point where the travel will leave the Mississippi for the land route north. From the junction of the Ohio the Mississippi is always navigable for the largest class boats. For a greater part of the year Cairo can be reached by railroad much cheaper than by steamboat. Below that point the river will always offer the cheapest carriage. This will constitute that place the shipping point of an immense amount of produce. Its proximity to the coal fields of Illinois is another fact in its favor. As we said before, the completion of the above

roads is all that is wanted to make it what its friends claim it is capable of becoming, the commercial capital of Illinois.

Important to Railroad Co's and Car Builders.



THE question which for a long time has been pending before the Commissioner of Patents, involving the Validity of the Patent claimed by F. M. Ray, of this city, and W. C. Fuller, of England, for the use of India rubber for Railroad Car Springs in the 'Disc' form, has been decided in favor of Mr. Ray, the American Inventor. This decision gives to Mr. Ray and his associates the sole right to manufacture and sell the India rubber Car Springs in all the varieties in use. Railroad Companies and Car Builders will please take notice of this fact. All purchases that have been made of any other persons, than said Ray and his associates, since the filing of his application, have been infringements of his patent, as well as all that may be made for the future.

To Contractors.

ALABAMA AND TENNESSEE RIVER R. R. SEALED Proposals will be received by the Directors of the Alabama and Tennessee River Railroad, at their office in Selma, until the 1st of November next, for the graduation, masonry and bridging of 56 miles of the Southern Division of said road, extending northwardly from Selma.

Plans and profiles may be inspected and specifications and information will be given at the office of the company in Selma, on and after the 15th of October next.

Twenty-six miles of this division were graded in 1839. This part of the division will require repairs to the road bed, and will be furnished anew with culverts and bridges.

The country embraced in this division is healthy, well watered, and possesses facilities for obtaining supplies of provisions.

Proposals may be based upon cash payments, or upon payments of a proportion, or of the whole of the work in stock.

The Directors reserve to themselves the right to accept or reject proposals as they may think proper for the interests of the company.

The Directors expect to have as much as twenty miles of the Northern Division, extending northwardly from the Coosa river in Shelby county, ready for examination by the 15th November, and for letting by the 1st December; and 30 miles more, ready for examination by the 1st and for letting by the 15th of January, 1851. It is likewise their intention to let out the grading, masonry and bridging of the remainder of the Southern Division and of the Northern Division terminating at Gadsden, with all possible despatch.

By order of the President and Directors,
LEWIS TROOST, Chief Engineer.
Selma, Ala., August 30, 1850.

Great American Engineering

AND MECHANICAL WORK, just published in medium folio One Dollar, 75 cts. to Subscribers. Part VII of "Specimens of the Stone, Iron & Wood Bridges, Viaducts, Tunnels, Culverts, &c., &c., of the United States Railroads." By George Duggan, Architect and Civil Engineer.

The present part contains beautifully executed plans, elevations, sections and details of the elegant timber Bridge, (Burr's Patent,) 150 feet span, across Salmon River, Malone, on the line of the Northern-Ogdensburg-railroad, and isometrical views of Bridges 30, 40, 60, 82 and 86 feet span on the line of the Utica and Syracuse railroad, with specifications, form of contract, &c., &c., for the Connecticut River railroad.

"It is a work that was a great desideratum, and must prove of great benefit to the engineering profession generally, and especially to the tyro in practical engineering and mechanical knowledge; in truth it strikes us, that it would require years of labor and patient toil on the part of a young engineer to prepare the drawings, and collect the information that will be embodied in this work, and can now be secured for the trifling sum of \$9"—[Scientific Amer. March 16, 1850.]

In connection with this subject (Iron Railroad Structures) we take occasion to call attention again to Mr. Duggan's valuable and expensive publication, exhibiting drawings, with full descriptions of the various stone, iron and wooden bridges, viaducts, tunnels, culverts, etc., of all the Railroads in the United States. Mr. Duggan is an accomplished Architect and Civil Engineer, who came from Ireland to this country to exercise his profession; but finding railroad construction here, in many respects, different from that he had been accustomed to in Europe, he applied himself to the study of our system; and the fruits of his researches and investigations embodied in this work, are well calculated to meet the exigencies of engineers, and to assist draughtsmen, bridge builders, mechanics and students.—[N. Y. Jour. of Com., Feb. 14, 1850.]

Published by **GEORGE DUGGAN**,
300 Broadway, New York.

To whom all communications should be addressed, and subscriptions forwarded.

Emerson's Patent Ventilator,

ADAPTED to Cars, Engine houses, Public Halls, Factories, Churches, School Houses, Dwellings, Chimney Flues, etc.



This Ventilator is stationary, and cannot get out of order. It is constructed in such conformity to certain ascertained laws of pneumatics, as to insure a constant draft outward, whatever may be the changing direction of the wind. The Massachusetts Mechanic Association have awarded a gold medal to the Inventor, and the Manufacturers have already disposed of over

3,000 of the article. Manufactured and sold by
CHILSON, ALLEN, WALKER & Co.,
351 Broadway, New York.

NOTICE

For Proposals for Railroad Iron, for the Alabama and Tennessee River Railroad,

TO BE MANUFACTURED FROM ALABAMA ORE.

THE Alabama and Tennessee River Railroad Co. invite proposals, until the 1st of January, 1851, for Iron Rails, to be made of Alabama Iron, for the Northern Division and part of the Southern Division of their road, embracing a distance of about 105 miles. The rails are to be of the H pattern, in lengths of 18 feet, and weighing 63 lbs. per lineal yard. They are to be delivered on the Coosa river, at a landing to be hereafter designated, between Kimulgee ferry and Fort Williams, commencing their delivery on the 1st of November, 1851, and continuing it at the rate of from 80 to 100 tons per week, until the whole quantity required (10,500 tons) shall have been delivered. They are to be inspected by Lewis Troost, Chief Engineer.

It is proper to state to iron masters and capitalists at a distance, that the country traversed by the Northern and part of the Southern divisions of the road abounds in excellent iron ore and bituminous coal, and possesses every advantage for the successful manufacture of iron, health, cheap labor and provisions.

Further information may be obtained by addressing the President of the Company at Selma, Ala. By order of the Board of Directors.

J. W. LAPSLEY, President.

Great Work on Bridge Building, etc., etc.

JUST published in medium folio, One Dollar, 75 cts. to subscribers.

Part I. of a "THEORETICAL AND PRACTICAL TREATISE ON THE CONSTRUCTION OF BRIDGES IN STONE, IRON AND WOOD," By George Duggan, Architect and Civil Engineer.

The present part contains beautifully executed plans, elevations, sections, and centering, of the Bridge of St. Maixence, France, by M. Perronet, the eminent Architect and Engineer, and plans, elevations, sections, and details of the oblique Timber Bridge, 700 ft. long, constructed for a double track across the River Tyne, on the line of the Newcastle and Carlisle railroad, by John Blackmore, C. E., with an introductory article on the relative merits of the various materials employed in the construction of Bridges, as regards economy, strength and durability, and critical remarks on the various forms of bridges designed and constructed by the most eminent architects and engineers in Europe and America.

"PART VI. of Specimens of the Stone, Iron and Wood Bridges, etc., etc., of the United States Railroads," By George Duggan, Architect and Civil Engineer, contains specimens of the plates and letter press intended for the APPENDIX, being the commencement of a complete Treatise on the Theory and Practice of Bridge Building. This will be one of the most valuable works on the subject ever presented to the attention of engineers in this country—condensing the most important information on this branch of architecture contained in the writings of the most eminent scientific men in the French, German, Italian, and English languages, in the course of the last and present century. It will be illustrated by numerous accurate representations of bridges of the greatest celebrity in modern times. Elaborate articles will be given on the strength, property, and uses of the different materials employed, and on the most approved methods of constructing Cofferdams, Foundations, Centering, etc., with descriptions and drawings of the various engines and Machines that were found most useful in constructing the works, and a selection of such specifications as may be of service to the practical bridge builder. The sixth number treats of the Application of Iron to Railroad Structures, and is illustrated by beautiful drawings of the Bridge across the Delaware at Saw Mill Rift on the Erie Railroad, and of the bridge over Fairfield street, on the Manchester and Birmingham Railroad. The great success of this work thus far is the best tribute to its scientific merit and its adaptation to the wants of the American engineer."—[New York Daily Tribune, June 28, 1850.]

Published by George Duggan, 300 Broadway, New York, to whom all communications should be addressed and subscriptions forwarded.

Parties remitting Mr. Duggan \$5. and the remainder \$4 when they have been supplied with the first six parts of the "Theoretical and Practical Treatise on Bridge Building, etc." shall receive it monthly as published. To those making Mr. Duggan a present remittance of \$9, the work will be forwarded post free to any part of the United States.

Rosendale Cement.

THE NEWARK AND ROSENDALE LIME AND CEMENT CO. are now manufacturing at their works in NEWARK, N. J., and Ulster county, N. Y., a very superior article of *Hydraulic Cement*—also Lime Calcine Plaster, etc. Contractors and dealers will find it to their advantage to call or make application before purchasing elsewhere. All communications addressed to the subscriber, at Newark, N. J., will be punctually attended to.

ly*15

HENRY WILDE, Secretary.

Notice to Contractors.

SEALED PROPOSALS will be received at the office of the James River and Kanawha Company in Richmond, until the 1st day of October next, for the construction of the Piers and Abutments of the Bridges across James River at New Canton, Hardwicksville and Bent Creek. This work will be paid for in cash. Besides the usual reservation of 20 per cent. on the monthly estimates, the contractor or contractors will be required to give ample security, satisfactory to the Board of Directors, for the completion of the work at the time and in the manner specified in the contracts.

Plans of the above works will be exhibited and specifications thereof delivered to the contractors at the office of John Couly, the Assistant Engineer in charge of the same in Columbia.

WALTER GWYNN,
Chief Eng. J. R. & K. Co.

August 16, 1850.

GRAHAM'S COMPOSITION, to Remove and Prevent Incrustation (or Scale) in STEAM BOILERS.

THIS valuable composition having been fully and extensively tested, is now offered to the public, as a sure remedy and preventive for incrustations in steam boilers of all descriptions. By its use, all scale is entirely removed from the boilers of Ocean and River Steamers, Locomotive and Stationary Engines, in from 3 to 20 running days, according to the size of the boiler and thickness of the scale. In New Boilers, all incrustation is prevented at a trifling expense.

The preservation of the boiler, great economy of fuel and labor, safety, and increased speed, are among the advantages to be derived from the use of this composition.

Orders should state the quality of water used, viz: "Salt," "Fresh," or "Brackish."

For sale, with directions for use, by

W. H. NEWMAN,
75 Pearl street,
New York.

TESTIMONIALS.

New York, August 17, 1850.

We have used Graham's Composition in the boilers of the Steamship Southerner, during several voyages between this place and Charleston. The boilers were old and very foul with scale, a very large quantity of which was removed by the use of the composition, and no new scale was formed.

From our own experience and observation in the use of the article, we are fully satisfied that it will effectually remove the incrustation made by sea water, and also that it will effectually prevent its formation.

We are also satisfied that the use of it will be attended with a great saving of fuel, and that it has no injurious effect upon iron.

DAVID N. MAXON, Engineer,
BERRY, Master,
Steamship Southerner.

Steamship Philadelphia,
New York, August 27, 1850.

I have used "Graham's Composition for Steam Boilers," in the boilers of Steamship Philadelphia, on the voyage to and from Chagres, and am entirely satisfied that it will remove, dissolve and prevent all scale or incrustation in salt water boilers.

For the preservation of the boiler and economy of fuel and labor, I hereby recommend the employment of this composition in the Boilers of Ocean Steamers.

WM. BISBY,
Chief Engineer.

Novelty Iron Works,
New York, July 5, 1850.

We have examined the specimen of Graham's Composition for preventing incrustation of steam boilers, and we believe it may be used with perfect safety in reasonable quantities for the purpose intended, as there does not appear to be any agent in the composition calculated to injure the iron.

STILLMAN, ALLEN & CO.

Piermont, May 20, 1850.

I have used "Graham's Composition," and find it to produce the intended effect; and I hereby, without hesitation, recommend it for Stationary, Marine and Locomotive Engine Boilers.

JOHN BRANDT,
Superintendent Motive Power
New York & Erie R.R.

New York, July 25, 1850.

In answer to many inquiries as to the practical effect of "Graham's Composition," I will state that I have used it in the boiler of the Steamboat Sunwick, which had become considerably incrustated with hard scale from both salt and fresh water. We used 10 lbs. per day, for three days, without blowing off the water, until the fifth day, when all was drawn off. To our astonishment, we found the whole interior of the boiler as clear of scale and smooth as when it came from the hands of the maker. The following week, we tried the same quantity in a small steam tow boat. The boiler had old scale of long accumulation and very thick. We ran the boat three days without blowing off, and on the fourth day washed out the boiler and found it, like the "Sunwick's," perfectly clean and smooth as when new. I am therefore enabled to state that the use of the composition in these two instances under my own immediate observation and direction, has been attended with complete success.

JAMES MORROW,
Engineer Astoria Ferry.

Faggotted Car and Engine Axles

FORGED by RANSTEAD, DEARBORN & Co., Boston, Mass.
These Axles enjoy the highest reputation for excellence, and are all warranted.

Ogden & Martin's ROSENDALE CEMENT.

WE are prepared to enter into arrangements for supplying our Cement for public works or other purposes. We warrant the cement equal in every respect to any manufactured in this country. It attains a great degree of hardness, sets immediately under water, and is a superior article for masonry coming in contact with water, or requiring great strength.

For sale in tight barrels, well papered, at their office by
OGDEN & MARTIN, 104 Wall st.
February 16, 1860.

The above cement is used in most of the fortifications building by government.

Railroad and Mathematical Instruments.

KUNS & BASELER, Mathematical Instrument makers, manufacture and keep for sale all kinds of mathematical instruments; also drawing instruments, scales and balances for the use of chemists, professional gentlemen, jewellers, etc., etc., of the most perfect description, at the lowest price, at 81 Nassau street, New York.

Ibbotson, Brothers & Co's CELEBRATED CAST STEEL

AND
Best Cast Steel Royal Improved Files, well known as better adapted for Engineers' and Machinists' purposes than any now in use in the United States.

Every description of Square, Octagon, Flat and Round Cast Steel, Sheet, Shovel and Railway Spring Steel, etc., and Steel to order for any purposes—manufactured at their works in Sheffield—and universally known by the old stamp "Globe."

HENRY I. IBBOTSON, Agent.,
218 Pearl st., New York.

Railroad Iron.

OF ANY PATTERN AND WEIGHT,
Of a Favorite Brand,
And deliverable in Bond, or Duty paid, at any Port of the U. S., contracted for on favorable terms, by
CHARLES ILLIUS,
20 Beaver St., New York.

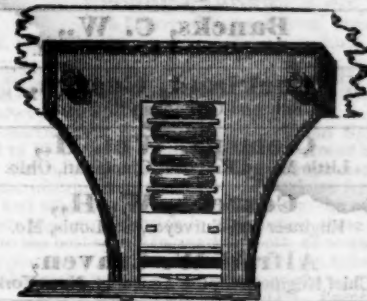
Pig and other Iron also contracted for. Sole Agent for "Baxter's Machine and Burning Oil"—particularly adapted for "Railroads" and other Machinery—Preferred to Sperm by the many now using it, and 25 per cent. cheaper.

Coal.

CUMBERLAND SEMI-BITUMINOUS COAL
superior quality for Locomotives, for sale by
H. B. TEBBETTS,
No. 40 Wall St., New York.

May 12, 1849.

FULLER'S PATENT INDIA RUBBER SPRING.



THESE SPRINGS ARE THE CHEAPEST, the lightest and most durable of any yet known. They are easily applied to new or old cars, and there is small possibility of any accident occurring to them.

Other parties through Mr. Ray set up claims to an India Rubber Spring which, though the same in principle, is very inferior in its working and durability. Actions are in progress for an Infringement on Fuller's Patent against parties using that Spring.

The superiority of Fuller's Spring over that claimed by Mr. Ray is fully established and has frequently been testified to. The following are from gentlemen who have had much experience with both Springs.

"It will afford me pleasure to recommend your springs to the companies in this region, in preference to Ray's which I am confident are inferior in mechanical arrangement to yours."
JOHN M'RAE,
Engineer S. Carolina R. R., Charleston.

"I do not hesitate to allow you to say that I concur in Mr. M' Rae's opinion that Ray's springs are inferior in mechanical arrangement to Fuller's. I repeatedly expressed that opinion long before Mr. M' Rae had seen your springs (as I believe) and entertain it still."
WM. PARKER,
Gen'l Supt. of Baltimore and Ohio R. R.

Office of Sup't Norwich & Worcester R.R. Co.,
December 26, 1849.

"I most fully concur in the opinion of Jno. McRae, Engineer of S. Carolina Railroad, that 'Rays Springs are inferior to Fuller's Springs,' and shall with pleasure recommend them to all Railroad Companies for adoption. I have used both springs on this road and have no hesitation in saying that I should in all cases prefer Fuller's Spring."

SAM'L H. P. LEE, JR.,
Sup't and Engineer.

Office B. & P. R. R. Co.,
Boston, 20th December, 1849.

"This company have cars fitted up with both Ray's and Fuller's 'Metallic India Rubber Springs,' and do not hesitate to say that Fuller's arrangement is very much superior to Ray's."

W. RAYMOND LEE, Supt.

The following result has been obtained by experiment upon one railroad.
A set of Trucks fitted with Steel Springs cost \$190.77 and weigh 2355 lbs. The same with Fuller's Springs, 131.71 " 1911 lbs.

Difference, \$59.06 " 444 lbs.

Not only is there an advantage in the cost, but owing to the great reduction in weight, the car can be made lighter throughout, and so an enormous saving in weight may be effected in a Train.

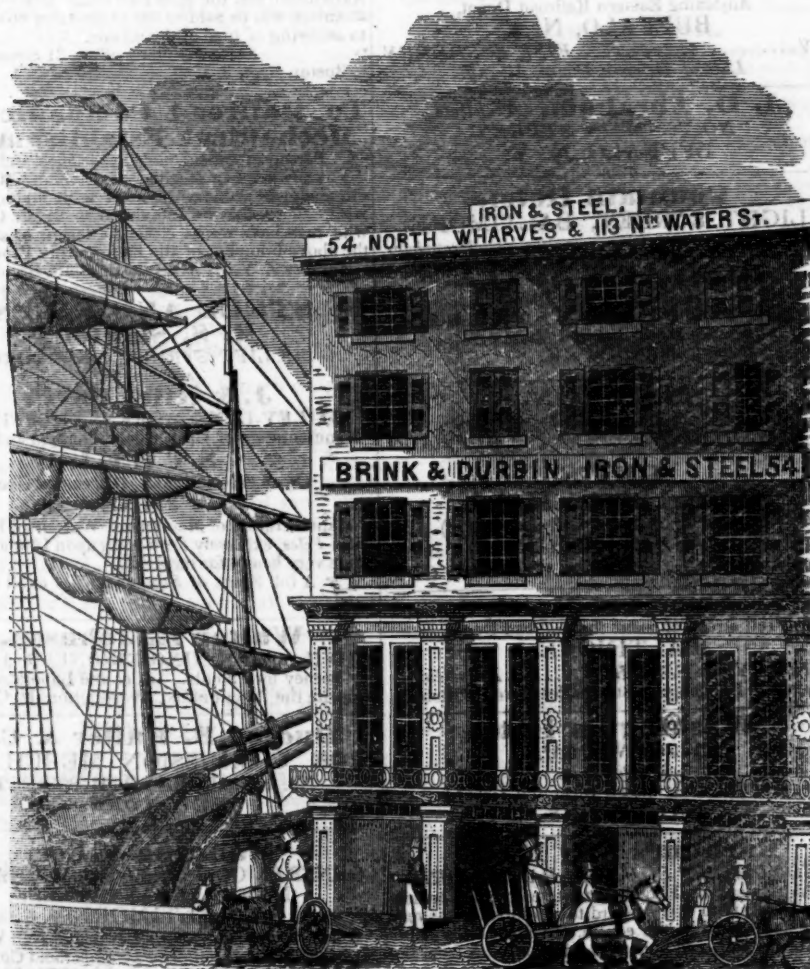
AGENTS.

G. M. KNEVITT, 38 Broadway, N. Y.,
JOHN THORNLEY, 110 Chestnut St., Philad.
The BOSTON BELTING CO., Milk st., Boston.
January 2, 1860.

American Cast Steel.

THE ADIRONDAC STEEL MANUFACTURING CO. is now producing from American iron, at their works at Jersey City, N.J., Cast Steel of extraordinary quality, and is prepared to supply orders for the same at prices below that of the imported article of like quality. Consumers will find it to their interest to give this a trial. Orders for all sizes of hammered cast steel, directed as above, will meet with prompt attention.

May 28, 1849.



To Merchants, Railroad Companies, Machinists and Boiler Makers.

THE subscribers beg leave to call attention to their very large stock of Iron and Steel—of American, English, Swede and Norway make—of all the different kinds in use. Also, Railroad Iron, Ship, Boat and Railroad Spikes. They are also Agents for the Best Pennsylvania Locomotive Boiler and Tank Iron, each sheet of which will be stamped and warranted, at lowest mill prices. Our prices for all kinds of iron will be found very low, either for cash or approved credit.

BRINK & DURBIN, Philadelphia.

ENGINEERS.

Atkinson, T. C.,
Alexandria and Orange Railroad, Alexandria, Va.

Bancks, C. W.,
Civil Engineer, Vicksburg, Miss.

Buckland, George,
Troy and Greenbush Railroad.

Clement, Wm. H.,
Little Miami Railroad, Cincinnati, Ohio.

Cozzens, W. H.,
Engineer and Surveyor, St. Louis, Mo.

Alfred W. Craven,
Chief Engineer Croton Aqueduct, New York.

Davidson, M. O.,
Eckhart Mines, Alleghany Co., Maryland.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Fitchburg Railroad, Boston, Mass.

Floyd-Jones, Charles,
South Oyster Bay, L. I.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,
Nashville and Chattanooga R. R., Nashville, Tenn.

S. W. Hill,
Mining Engineer and Surveyor, Eagle River,
Lake Superior.

Hewson, M. Butt,
Memphis, Tenn.

Holcomb, F. P.,
Southwestern Railroad, Macon, Ga.

Johnson, Edwin F.,
New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,
Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,
Worcester and Nashua Railroad, Worcester, Mass.

Morris, Elwood,
Schuylkill Navigation, Schuylkill Haven, Pa.

Morton, A. C.,
Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,
South Carolina Railroad, Charleston, S. C.

Nott, Samuel,
Lawrence and Manchester Railroad, Boston.

Prichard, M. B.,
East Tennessee and Georgia R. R., Cleveland, Tenn.

Roebbling, John A.,
Trenton, N. J.

W. Milnor Roberts,
Bellefontaine and Indiana Railroad, Marion, Ohio.

Roberts, Solomon W.,
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Sanford, C. O.,
South Side Railroad, Virginia.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Sours, Peter,
Rahway, New Jersey.

Stark, George.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,
Pottstown, Pa.

Trautwine, John C.,
Panama Railroad—Address through office of Panama
Railroad Co., 78 Broadway, N. Y.

Trimble, Isaac R.,
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,
United States Fort, Bucksport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Troost, Lewis,
Alabama and Tennessee Railroad, Selma, Ala.

Whipple, S.,
Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,
Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,
Milwaukee, Wisconsin.

HOTELS.

Exchange Hotel,
Adjoining Eastern Railroad Depot,
BUFFALO, N. Y.
BY.....**FISS & SPERRY,**
Late of Delevan House, Albany.

J. D. Abraham, Architect,
NO. 300 MAIN STREET,
BUFFALO, N. Y.

Fountain Hotel,
LIGHT STREET, BALTIMORE,
P. THURSTON.....Proprietor.

DUNLAP'S HOTEL,
On the European Plan,
NO. 135 FULTON STREET,
Between Broadway and Nassau St.,
NEW YORK.

MANSION,
Corner of Maine and Exchange Streets,
P. DORSHIMER. BUFFALO.

GUY'S
United States Hotel,
(Opposite Pratt street Railroad Depot.)
BALTIMORE.
JOHN GUY. WILLIAM GUY.

American Hotel,
Pratt street, opposite the Railroad Depot,
BALTIMORE.
HENRY M. SMITH.....Proprietor.
Late of the Exchange & St. Charles Hotels, Pittsburg.

Washington Hotel,
BY JOHN GILMAN,
\$1 Per Day.
No. 206 Pratt street, (near the Depot.)
BALTIMORE.

Barnum's City Hotel,
MONUMENT SQUARE, BALTIMORE.
This Extensive Establishment, erected expressly
for a Hotel, with every regard to comfort and convenience,
is situated in the centre and most fashionable
part of the city, and but a few minutes' walk from the
Railroad Depots and Steamboat Landings.
The House has lately undergone a thorough repair,
embracing many valuable improvements, and will accommodate
250 Guests. BARNUM & CO.

JONES' HOTEL,
NO. 152 CHESTNUT STREET,
PHILADELPHIA.
Business & West.....Proprietors.

BUSINESS CARDS.

Lithography.

JOHN P. HALL & CO.,
161 Main st., Buffalo, (Commercial Advertiser Build.)
Are prepared to execute all kinds of Lithography
in good style and at reasonable rates. Particular attention
will be paid to Engraving Railroad Maps, Engineer's
Plans and drafts, etc., and orders in this line
are respectfully solicited.

J. T. Hodge

Will attend to the examination of mining tracts near
Lake Superior, and prepare Reports and Maps.
Address, during the Summer,
[Ontanagon Postoffice, Lake Superior.

Cumberland Steam Coal,

FROM THE
FROSTBURG MINES, MD.
H. A. TUCKER,
Agent of Frostburg Coal Co.
No. 50 Wall Street, New York.

Eaton, Gilbert & Co.,
Railroad Car, Coach and Omnibus Builders,
TROY, N. Y.

Charles T. Jackson, M. D.,
STATE ASSAYER, late Geologist to Maine, Rhode
Island, New Hampshire, and the United States,
offers his services to his friends and the public in making
any Chemical, Mineralogical or Geological re-
searches that may be required for the improvement of
Agriculture and the Manufacturing Arts. Particular
attention will be paid to the exploration of mines and
to assaying of ores of the metals.
State Assayer's office, 31 Somerset st.
Boston Sept. 3, 1850.

To Railroad Companies and
Mechanical Establishments.

A Person of considerable experience and practical
knowledge in Mechanical, Civil and Marine En-
gineering, is anxious to meet with an engagement
with either a Private Individual or Public Company,
who may have works either to design or execute in
the above branches of the Engineering Profession.
Address Z. Y., 47 Atlantic st., South Brooklyn, L.I.

STEEL AND FILES.

R. S. Stenton,
20 CLIFF STREET, NEW YORK,
AGENT FOR
J. & Riley Carr's
BAILEY-LANE WORKS, SHEFFIELD,
Manufacturers of Cast, Shear, German and Blister
STEEL
Of all descriptions. Warranted Good
FILES.

Manufacturers of Machinists' Warranted Best Cast
Steel Files, expressly for working upon Iron and Steel,
made very heavy for recutting.
A full Stock of Steel and Files at all times on
hand. 6m4

Walter R. Johnson,
CIVIL AND MINING ENGINEER AND AT-
torney for Patents. Office and Laboratory, F St.,
opposite the Patent office, Washington, D. C.

Dudley B. Fuller & Co.,
IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.

Manning & Lee,
GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.

Agents for Avalon Railroad Iron and Nail Works.
Maryland Mining Company's Cumberland Coal 'CED'
—'Potomac' and other good brands of Pig Iron.

Cop Waste.

CLEAN COP WASTE, suitable for cleaning Rail-
road, Steamboat and Stationary Engines, con-
stantly on hand and for sale by
KENNEDY & GELSTON,
64 Pine St., New York.
October 27, 1849, 3m

PLUSHES

FOR

Railway Cars & Omnibuses.**F. S. & A. MARTINE,**
112 WILLIAM ST., NEAR JOHN.

ARE now receiving a large and complete assortment of Plain and Figured PLUSHES, of their own importation, which will be sold at the lowest market price, viz: Crimson, Maroon, Scarlet, Green, Blue, Purple, etc.

ALSO—CURLED HAIR, the best manufactured in market.

Samuel Kimber & Co.,
COMMISSION MERCHANTS
WILLOW ST. WHARVES, PHILADELPHIA.

AGENTS for the sale of Charcoal and Anthracite Pig Iron, Hammered Railroad Car and Locomotive Axles, Force Pumps of the most approved construction for Railroad Water Stations and Hydraulic Rams, etc., etc.
July 27, 1849.

James Herron, Civil Engineer,OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.

PATENTEE OF THE

HERRON RAILWAY TRACK.

Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

To Railroad Companies.—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.**NORRIS' LOCOMOTIVE WORKS,**
SCHENECTADY, NEW YORK.

Are Manufacturing Wrought Iron Driving, Truck, Tender, and Car Wheels—made from the best American Iron. Address E. S. NORRIS.
May 16, 1849.

Manufacture of Patent Wire
ROPE AND CABLES,

For Inclined Planes, Suspension Bridges, Standing Rigging, Mines, Cranes, Derrick, Tillers, &c., by
JOHN A. ROEBLING, Civil Engineer,
TRENTON, N. J.

Doremus & Harris,ANALYTICAL & CONSULTING CHEMISTS,
179 BROADWAY, NEW YORK.**SCHOOL OF CHEMISTRY.****To Engineers and Surveyors.**

E. BROWN AND SON Mathematical inst. makers No. 27 Fulton Slip, New York, make and keep for sale, Theodolites, Levelling inst., Levelling rods, Surveyors Compasses, and Chains, Cases of Mathematical drawing insts. various qualities, together with a general assortment of Ivory Scales and small insts. generally used by Engineers.

Ranstead, Dearborn & Co.,MANUFACTURERS OF
LOCOMOTIVE CRANKS AND CAR AXLES,

ALSO

WROUGHT IRON SHAFTING,

And All Kinds of Hammered Shapes.

Forge at Commercial Point, Dorchester,
Office 25 Foster's Wharf, opposite No. 211 Broad St.
BOSTON.

Henry I. Ibbotson,

IMPORTER of Sheffield and Birmingham Goods.
Also, Agent for the Manufacture of Telegraph Wire.
218 PEARL ST., NEW YORK.

Cumberland, (Md.) Coals for
Steaming, etc.

ORDERS RECEIVED FOR AND FILLED
by
J. COWLES, 27 Wall St., N. Y.

Samuel D. Willmott,

MERCHANT, AND MANUFACTURER OF
CAST STEEL WARRANTED SAWS,

—AND FILES—

IMPORTER OF THE
GENUINE WICKESLY GRINDSTONES
NO. 8 LIBERTY STREET,
NEW YORK.

Railroad Instruments.

THEODOLITES, TRANSIT COMPASSES,
and Levels, with Fraunhoffer's Munich Glasses,
Surveyor's Compasses, Chains, Drawing Instruments,
Barometers, etc., all of the best quality and
workmanship, for sale at unusually low prices, by
E. & C. W. BLUNT,
No. 179 Water St., cor. Burling Slip.
New York, May 19, 1849.

IRON.**Car Wheel Iron.**

100 Tons "Columbia" No. 2 Cold Blast Charcoal
Iron.
300 Tons "Salisbury" No. 1, do. do.
For sale by **CHARLES T. GILBERT,**
No. 80 Broad st.
New York, Sept. 21, 1850.

Railroad Spikes.

THE subscribers are prepared to make and execute
contracts for Railroad Spikes of a superior quality,
manufactured by the New Jersey Iron Company,
at Boonton.
DUDLEY B. FULLER & CO.,
139 Greenwich st. corner of Cedar.

Railroad Iron.

FOR SALE—500 Tons of superior flat bar Railroad
Iron, two and a half by three-fourths—which has
been in use on the Cumberland Valley Railroad for
about three years. For terms apply to Henry J. Bid-
dle, Esq., Philadelphia, or to **FREDK. WATTS,**
President of the Cum. Val. R.R., Carlisle, Pa.
Carlisle, Sept. 17, 1850.

Railroad Iron.

1650 Tons, weighing about 61 lbs. per yard, 40
tons, weighing about 52 lbs. per yard, and
825 tons, weighing about 53½ lbs. per yard, of the lat-
est and most approved patterns of T rail, for sale by
BOORMAN, JOHNSTON & CO.,
119 Greenwich street.
New York, Aug. 26, 1850.

N.B.—B. J. & Co. are also prepared to take con-
tracts for English rails, delivered in any of the Atlan-
tic ports of the United States.

Railroad Iron.

THE Undersigned, Agents for Manufacturers, are
prepared to contract to deliver Rails of superior
quality, and of any size or pattern, to any ports of dis-
charge in the United States.

COLLINS, VOSE & CO.,
74 South St.

New York, June 1, 1850.

Railroad Iron.

1,500 Tons weighing 53 lbs. per lineal yard.
500 " " 57 " "
500 " " 56 " "
500 " " 60 & 61 lbs. "
Also 2½x½ flat rails. All the above being of approv-
ed patterns. For sale by
DAVIS, BROOKS, & CO.,
68 Broad street.

N.B.—Rails imported on commission, or at a fixed
price.

Iron.

Pig Iron, Anthracite and Charcoal; Boiler and Flue
Iron, Spring and Blistered Steel, Nail Rods, Best Re-
fined Bar Iron, Railroad Iron, Car Axles, Nails, Stove
Castings, Cast Iron Pipes of all sizes, Railway Chairs
of approved patterns for sale by
COLEMAN, KELTON & CABELL,
109 N. Water St., Philadelphia.

Railroad Iron.

THE UNDERSIGNED, HAVING made arrange-
ments abroad, are prepared to contract for the de-
livery of Foreign rails, of approved brands upon the
most favorable terms.

They will also make contracts for American rails,
made at their Trenton works, from Andover Iron, in
whole or in part, as may be agreed upon.

They are prepared to furnish Telegraph, Spring and
Market Wire; Braziers and Wire Rods; Rivets and
Merchant Bars to order, all made exclusively from An-
dover Iron. The attention of parties who require iron
of the very best quality for special purposes, is respect-
fully invited.
COOPER & HEWITT,
17 Burling Slip, New York.

February 15, 1850.

Glendon Refined Iron.

Round Iron, Band Iron, Hoop Iron,
Square " Flat " Scroll "

Axles, Locomotive Tyres,

Manufactured at the Glendon Mills, East Boston, for
sale by **GEORGE GARDNER & CO.,**
5 Liberty Square, Boston, Mass.

Sept. 15, 1849.

3m37

PATENT HAMMERED RAILROAD, SHIP &
BOAT SPIKES.—The Albany Iron Works
have always on hand, of their own manufacture, a
large assortment of Railroad, Ship and Boat Spikes
from 2 to 12 inches in length, and of any form of head.
From the excellence of the material always used in
their manufacture, and their very general use for rail-
roads and other purposes in this country, the manu-
facturers have no hesitation in warranting them fully
equal to the best spikes in market, both as to quality
and appearance. All orders addressed to the subscrib-
ers at the works will be promptly executed.

JOHN F. WINSLOW, Agent.

Albany Iron and Nail Works, Troy, N. Y.

The above Spikes may be had at factory prices, of
Erastus Corning & Co. Albany; Meritt & Co., New
York; E. Pratt & Brother, Es. Timera Md.

LAP—WELDED
WROUGHT IRON TUBES

FOR

TUBULAR BOILERS,FROM ONE AND A QUARTER TO SEVEN
INCHES IN DIAMETER.

THE ONLY Tubes of the same quality and man-
ufacture as those so extensively used in England,
Scotland, France and Germany, for Locomotive, Ma-
rine and other Steam Engine Boilers.

THOMAS PROSSER & SON, Patentees,
28 Platt street, New York.

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO
contract for the delivery of English Railroad Iron
of favorite brands, during the Spring. They also re-
ceive orders for the importation of Pig, Bar, Sheet, etc.
Iron.
THOMAS B. SANDS & CO.,
73 New street,
New York.

February 3, 1849.

New York.

Iron Store.

THE Subscribers, having the selling agency of the
following named Rolling Mills, viz: Norristown,
Rough and Ready, Kensington, Philadelphia, Potts-
grove and Thorndale, can supply Railroad Companies,
Merchants and others, at the wholesale mill prices for
bars of all sizes, sheets cut to order as large as 58 in.
diameter; Railroad Iron, domestic and foreign; Loco-
motive tire welded to given size; Chairs and Spikes;
Iron for shafting, locomotive and general machinery
purposes; Cast, Shear, Blister and Spring Steel; Boil-
er rivets; Copper; Pig iron, etc., etc.

MORRIS, JONES & CO.,

Iron Merchants,

Schuylkill 7th and Market Sts., Philadelphia.

August 16, 1849.

ly33

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, AL-
legany county, Maryland, having recently pas-
sed into the hands of new proprietors, are now prepar-
ed, with increased facilities, to execute orders for any
of the various patterns of Railroad Iron. Communi-
cations addressed to either of the subscribers will have
prompt attention. **J. F. WINSLOW, President**
Troy, N. Y.

ERASTUS CORNING, Albany**WARREN DELANO, Jr., N. Y.****JOHN M. FORBES, Boston.****ENOCH PRATT, Baltimore, Md.**

November 6, 1848.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO
take orders for Railroad Iron to be made at their
Phoenix Iron Works, situated on the Schuylkill Riv-
er, near this city, and at their Safe Harbor Iron Works,
situated in Lancaster County, on the Susquehanna
river; which two establishments are now turning out
upwards of 1800 tons of finished rails per month.
Companies desirous of contracting will be promptly
supplied with rails of any required pattern, and of the
very best quality.

REEVES, BUCK & CO.45 North Water St. Philadelphia,
March 15, 1849.

Tredegar Iron Works.

ROLLING MILL FOUNDRY AND MACHINE SHOPS. The undersigned continues to manufacture at his Works in this city (from best charcoal metal) Bar Iron of every description, embracing—Rounds and Squares, from 1½ to 5 inches diameter. Flats, from 1 to 7 inches, all thicknesses. Bands and Scrolls, all sizes. Boiler plate and Plough Iron. Railroad and Locomotive Axles and Tires. Locomotive Frames, Spikes and Plates. Hoops, Ovals, Half Ovals, Half Rounds, Angle, T. L., and indeed every description of Iron usually manufactured, all of which he warrants to be equal to any made in this country. He also manufactures at his Foundry and Machine Shops all descriptions of Railroad Work, say, Locomotives, Railroad Wheels and Axles complete and ready for the road, Railroad Chairs, etc. Also, Marine and Stationary Engines all sizes, Sugar mills and Engines, Horse mills, and every kind of Machinery usually required for the operations of the country. He has paid particular attention to getting up machinery, etc., for Gold Mine operations, and those in want of such work might find it to their advantage to give him a call.

J. R. ANDERSON.
Richmond, Va., Sept. 10, 1850.

CUT NAILS OF BEST QUALITY, BAR IRON (including Flat Rails) manufactured and for sale by
FISHER, MORGAN & CO.,
75 N. Water St., Philadelphia.

Iron Wire.

REFINED IRON WIRE OF ALL KINDS, Card, Reed, Cotton-flyer, Annealed, Broom, Buckle, and Spring Wire. Also all kinds of Round, Flat or Oval Wire, best adapted to various machine purposes, annealed and tempered, straightened and cut any length, manufactured and sold by

ICHABOD WASHBURN.

Worcester, Mass., May 25, 1849.

Wheel, Forge and Foundry Iron.

LOCUST GROVE Wheel Iron of great strength and superior chilling property. Balt. Charcoal Forge Iron, from Patuxent, Curtis Creek and Gunpowder furnaces. Elkridge Foundry Iron, of superior strength and softness. Anthracite and Charcoal Iron from Pennsylvania and Virginia. Gas and Water Pipes, Lamp Posts from Elkridge furnace.

LEMMON & GLENN,
6m9 62 Buchanan's Wharf, Baltimore.

S. S. Keyser & Co., IRON WAREHOUSE,

Corner of South and Pratt Streets,
BALTIMORE, MD.

Selling Agents for the Rough and Ready Bar Iron and Elk Boiler and Flue Iron Rolling Mills, Sarah and Taylor Furnaces, and Wrightsville Hollow Ware Foundry, and Dealers in Bar and Sheet Iron, and Cast, Sheer, German, Blister, Spring and Electroplated Steel, etc., etc.

Smith & Tyson,

GENERAL COMMISSION MERCHANTS,
No. 25 South Charles St., Baltimore, Md.

AGENTS for the Celebrated Columbia Pig Iron, suitable for Car Wheels and Chilled Rolls. Columbia refined Charcoal Blooms; Refined Charcoal Junlatia Billet Iron for Wire; Refined Iron for Bridging, of great strength; Cut Nails, Spikes, and Brads; Railroad Spikes and Wrought Chairs. 22tf

Stickney & Beatty,

DEALERS IN IRON AND IRON MANUFACTURERS.

AGENTS for the Balt. City Rolling Mill, from which establishment they are prepared to furnish Ellicott's round, square, and flat bar iron, puddled and charcoal boiler plates and billet iron—also agents for the sale of the Laurel and Maryland (Balt.) charcoal forge pig irons, Balt. hard iron for chilling wheels, anti-Ratam nails, Catocin foundry iron, boiler blooms from the Caledonian works, Wm. Jessop & Son's cast steel, Coleman's blister steel and nail rods, hoop, band, sheet, oval and common English iron.

No. 18 and 20 South Charles st., Baltimore.

Railroad Iron.

CONTRACTS made by the subscribers, agents for the manufacturers, for the delivery of Railway Iron, at any port in the United States, at fixed prices, and of quality tried and approved for many years, on the oldest railways in this country.

RAYMOND & FULLERTON, 45 Cliff St.

IRONDALE PIG METAL, MANUFACTURED and for sale by the Bloomsburg Railroad Iron Co.
LINDLEY FISHER, Treasurer.
75 N. Water St., Philadelphia.

Railroad Iron.

2000 Tons, weighing 58 pounds per lineal yard, of the most approved pattern of T rails, in store and to arrive, for sale by

COLLINS, VOSE & CO.,
74 South St.

New York, June 1, 1850.

Railroad Iron.

3,000 TONS C. L. MAKE 63½ lbs. per yard, now landing and to arrive. Also contracts made for future delivery of above superior make English Iron.

300 Tons Banks Best Iron, Round, Square and Flat.
200 " English Bar " " " "
10 " 9-16 Square Iron for Railroad Spikes.

For sale in lots to suit purchasers by
DAVID W. WETMORE.
New York, March 26, 1850. 3m

WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory.

PARK WORKS, SHEFFIELD,
Double Refined Cast Steel—square, flat and octagon. Best warranted Cast Steel—square, flat and octagon. Best double and single Shear Steel—warranted. Machinery Steel—round.

Best and 2d gy. Sheet Steel—for saws and other purposes.

German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.

Genuine "Sykes," L Blister Steel. Best English Blister Steel, etc., etc., etc.

All of which are offered for sale on the most favorable terms by

WM. JESSOP & SONS,

91 John street, New York.

Also by their Agents—

Curtis & Hand, 47 Commerce street, Philadelphia.

Alex'r Fullerton & Co., 119 Milk street, Boston.

Stickney & Beatty, South Charles street, Baltimore.

May 6, 1849.

JOHNSON, CAMMELL & Co's Celebrated Cast Steel,

AND ENGINEERING AND MACHINE FILES, which for quality and adaptation to mechanical uses, have been proved superior to any in the United States. Every description of square, octagon, flat and round cast steel, sheet, shovel and railway spring steel, best double and single shear steel, German steel, flat and square, goat stamps, etc. Saw and file steel, and steel to order for any purposes, manufactured at their Cyclops Steel Works Sheffield.

JOHNSON, CAMMELL & CO.,

100 William St., New York.

November 23 1849.

Railroad Iron.

THE Undersigned, Agents for Manufacturers, are prepared to contract for the delivery of English, Welsh and Scotch Rails, of any pattern and weight, also for every description of English, Welsh, Scotch, and Swedish Iron, Railway Chairs and Spikes, Rivets, Bolts, Nuts, Washers, Chain Cables, Anchors, Tin Plates, German Spelter, Iron Castings, and every description of Machinery.

WILLIAM BIRD & CO.,

Iron and Tin Plate Merchants,

44 Wall st., New York.

And at 5 Martin's Lane, City, London,

and 140 Buchanan st., Glasgow.

July 27th, 1850.

To the Proprietors of Rolling Mills and Iron Works.

THE Undersigned—Proprietors of Townsend's Furnace and Machine Shop, Albany—are extensively engaged in the manufacture of Machinery and fixtures for Iron, and Copper Rolling Mills, and Iron Works. Having paid particular attention to the manufacture of *Rolls* (Rollers), both *chilled* and *dry-sand*, they feel confident that they can execute orders for such castings in a satisfactory manner. And to give assurance of this, they beg leave to refer to the following named persons, proprietors and managers of some of the most extensive rolling mills in the country, viz: Jno. F. Winalow, J. Tuckerman, H. Burden, W. Burt, J. & J. Rogers, Saltus & Co., J. B. Bailey, L. G. B. Cannon, Hawkins & Atwater, etc., etc.

F. & T. TOWNSEND.

Albany, August 18, 1849.

Railroad Iron.

B. O. Railway Tires, Railway Wheels, Scotch Pig Iron, Tin Plates and Banca Tin, Muntz's Patent Metal Sheathing, Baltimore Copper.

Contracts for Rails made on behalf of the manufacturers, for delivery at any ports in the United States, at fixed prices.

Bowling Tires and Tire Bars and Scotch Pigs imported to order.

Muntz's Ship-sheathing, and a general stock of Tin Plates and Banca Tin in store, and for sale by

RAYMOND & FULLERTON, 45 Cliff St.

Bowling Iron. Stamped B.O.

Railway Tire Bars Rivet Iron Locomotive and other Axles Locomotive Frame do Boiler Plates Bars.

and every other description of this superior Iron.

The subscribers, agents for the sale of Bowling Iron, are prepared to execute orders for importation, especially for railway and machinery uses, with despatch from the manufacturers.

RAYMOND & FULLERTON, 45 Cliff St.

Lovegrove's Patent Cast Iron Water and Gas Pipes.

THE Subscriber, the Inventor and Patentee of the Centrifugal mode of giving form to metallic substances while in a molten state, is preparing to make Cast Iron Water and Gas Pipes, of any dimensions, at prices much lower than they can be made in the old manner, and the pipes warranted to stand a pressure of three hundred pounds to the square inch, and to be soft enough to drill. Steam Engines and all kinds of machinery. Cast Iron Doors and Frames, and Mill Castings of every description, made to order.

THOMAS LOVEGROVE,

Machinist and Founder,

West Falls Avenue, below Pratt st., Baltimore.

Ray's Patent India Rubber Car Springs.

Savannah, Ga., May 22, 1850.

FOWLER M. RAY, Esq.,

Dear Sir: I have no hesitation in saying, after having used on our road your springs and Fuller's, that I consider yours decidedly the best in every particular, and in this opinion I am sustained by all our officers. Fuller's spring has a tendency to split, and also to chafe or abrade by the constant friction on the cast iron plates or disc: and in my opinion is not near so elastic as yours.

Your springs, which have been in use on our road for 12 or 15 months past, and in constant use under both passenger and freight cars, are to all appearances as elastic, sound and good, as when first put in use.

We are now building eighty-five new cars, of which for fifty-sets the springs have been ordered of you.

GEORGE A. ADAMS,

Master Carpenter,

Central Railroad and Banking Co. of Georgia.

Connecticut River Railroad Office, }
Northampton, May 4, 1850. }

E. CRANE, Esq.,

Dear Sir: It is now about two years since I first tried the experiment of using a set of Ray's India-rubber Springs upon one of our merchandise cars, and although the car has been in constant service since that time, I do not on examination find the slightest difference either in the thickness or elasticity of the material.

The same result has followed wherever we have applied them, either for wheel or draw springs on Engines, Tenders or Cars. At present we use no other; either in replacing old springs or building new cars—and I am perfectly satisfied that for economy, durability, safety, and ease of motion, that Ray's India-rubber is the best article for Springs which has been presented to the public.

Yours respectfully, **J. HUNT,**
Supt. Connecticut River Railroad.

EDWARD CRANE, Esq.,

Dear Sir: Having applied to cars of the Boston and Worcester Railroad Corporation, Ray's Vulcanised Rubber Springs (where they have been in use for some two years last past), I have had occasion to observe their operation, and am free to say in answer to your inquiries, that they retain their elasticity perfectly during all changes of atmospheric temperature: and are in my opinion a most valuable acquisition to Railroad Cars—are not liable to derangement, as is the case with steel springs; while at the same time it costs less to apply them. Respectfully yours,

D. N. PICKERING,

Supt. Motive Power, Boat, & Wor. Railroad.
Boston, April 15th, 1850.

Monument Foundry.

A. & W. DENMEAD & SON,
Corner of North and Monument Sts.,—Baltimore,
HAVING THEIR

IRON FOUNDRY AND MACHINE SHOP

In complete operation, are prepared to execute faithfully and promptly, orders for Locomotive or Stationary Steam Engines, Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw Mills, Slide, Hand or Chuck Lathes, Machinery for cutting all kinds of Gearing, Hydraulic, Tobacco and other Presses, Car and Locomotive patent Ring Wheels, warranted, Bridge and Mill Castings of every description, Gas and Water Pipes of all sizes, warranted, Railroad Wheels with best faggotted axle, furnished and fitted up for use, complete. Being provided with Heavy Lathes for Boring and Turning Screws, Cylinders, etc., we can furnish them of any pitch, length or pattern. Old Machinery Renewed or Repaired—and Estimates for Work in any part of the United States furnished at short notice.
June 8, 1849.

RAILROAD CAR AND COACH TRIMMINGS.

Doremus & Nixon,
IMPORTERS AND FURNISHERS

HAVE FOR SALE

Plain Garnet Plush. Fig. Garnet Plush (Butterfly pat.
"Crimson" "Crimson" (Elegant.
"Scarlet" " " (Gen. Taylor.

BROCATELLES.

Crimson Silk Brocatelles. Gold and Maroon do.
Gold and Blue " " Brown "
Silk and Wool " of every color.

MOQUETTES.

Of elegant designs and colors.
GERMAN CLOTH FOR CAR LININGS.
The most beautiful goods ever shown in this country, and the subscribers are the sole agents for the sale of them.

Oil cloths Enamelled with Gold. These goods can be
" " Silver. furnished in any dimensions req'd.
Do. Silver ground velvet printed. dimensions req'd.

CURLED HAIR

Of every description and quality.
JNO. W. A. STRICKLAND, Agent.
New York, 1850. 1yl6

FOWLER M. RAY'S**Patent India-rubber Railroad CAR SPRING.**

New York and Erie Railroad Shops.
Piermont, March 26, 1850.

This will certify that from practical experience in the use of Fowler M. Ray's India rubber Car Springs, I believe them to be far superior to any others now in use.

I have never known them to be affected by any change of temperature, as other Rubber Springs have been affected on this road.

I am at the present time repairing a Passenger Car that Mr. Ray and myself mounted with his springs about two years and eight months since.

The springs are at the present time as perfect, to all appearances, as when first applied to the car.

Respectfully yours,

HORACE B. GARDNER,
Foreman of the Car Shops.

Supt. Office N.Y. & H. R.R.,
New York, March 8, 1850.

This is to certify that we have used the Rubber Springs manufactured by Mr. F. M. Ray for the past twenty months, "both for Passenger and Freight Car Springs and Bumpers, and of different sizes," and have in every case given entire satisfaction, and I consider them the best spring now in use.

M. SLOAT, Supt.

Boston, March 5, 1850.

In answer to your enquiry about India-rubber Springs, I have to say that we have used them to a considerable extent on both freight and passenger cars, and also on several of our tenders; and I am very well satisfied that they answer all the purposes for which they are intended. I believe the India-rubber will soon supersede all other springs for cars and tenders.

Yours truly, **S. M. FELTON,**
Supt. Fitchburg Railroad.

Office New Jersey Railroad Co.,
Jersey City, March 8, 1850.

FOWLER M. RAY, Esq.,

Dear Sir: In answer to your enquiries respecting the operation of the Vulcanised Rubber Springs, purchased by our company from you some two years since, I reply that they are superior to any spring in use, (that I have either seen or heard of).

The improved form of your spring, consisting of a solid piece of vulcanised rubber with bands on the outside, is far superior to your first form, consisting of disks of rubber with metallic plates interposed.

The last named form was tried, if you recollect, at a much earlier period; and then was replaced by your last form.

I have no hesitation in saying that your springs have given entire satisfaction, and most cheerfully recommend them to railroad companies throughout the country for the following reasons:

1st. The cost is 30 per cent. less.
2d. Saving of weight on each car of 8 wheels from 700 to 800 lbs.

3d. Less care and attention is required, as they are not liable to get out of repair.

4th. A great saving is secured in the wear and tear of the cars and rails from their great elasticity.

5th. The freedom from noise.

6th. There is greater safety in case of accident, as they cannot be broken.

7th. The comfort of passengers is enhanced sufficiently to pay the expense, waiving all the other reasons that I have given.

Should this fail to satisfy any person enquiring, you are at liberty to refer to me, No. 150 Washington St., Jersey City. Yours respectfully,

T. L. SMITH, Supt.

New York, March 11, 1850.

I have used the Patent India-rubber Spring purchased of Mr. Ray, upon the cars of the New York and New Haven Railroad, and have found them efficient and economical; and when applied to the axles and draw springs, believe them to be quite equal to any in use. I have found a combination of these springs with a steel spring under the transom beam a very satisfactory arrangement, and am now using this plan in all new cars.

Yours respectfully,
ROBERT SCHUYLER.

February 25, 1850.

From practical observation of the use of the India-rubber Car Springs, manufactured and sold by your company, we are entirely satisfied in their application, and do not hesitate to recommend them as elastic, durable, requiring no repairs for years, and retaining their consistency during all extremes of weather. We have applied them for the past two years, and consider them superior for all railroad purposes.

Yours truly,

OSGOOD BRADLEY, Car Builder, Worcester.
T. & C. WASON, do. Springfield.
DEAN, PACKARD & MILLS, do. do.
DAVENPORT & BRIDGES, do. Cambridgeport.

Office of the New Jersey Railroad Co.,
Jersey City, March 7, 1850.

This is to certify that we have had Mr. F. M. Ray's India-rubber Springs in constant use under our cars and as Bumper Springs for upwards of two years, and they have in every way given perfect satisfaction.

The present form of spring we deem far superior to the form of Disk, having used both forms, although we have none of those made in Disks at present in use.

We take pleasure in recommending these springs to all railroad companies.

J. P. JACKSON, Vice Prest.
New Jersey Railroad and Trans. Co.

Roxbury, February 28, 1850.

In compliance with your request, I take great pleasure in stating the result of my experience in the use of "Ray's Patented Vulcanised India-rubber Car and Engine Springs." We have used them nearly two years, and never had one fail in any way. The cold weather does not affect them, as it has other rubber springs we have used.

With sixteen years' experience as superintendent of machinery on the Boston and Providence railroad, I take pleasure in saying that your springs are the best we ever used, or I ever saw used elsewhere. We have 20 cars rigged with them, of which I can say that the springs are as good now as when first applied. I put 24 lbs. of the rubber under the forward end of one of our heaviest engines, taking off 250 lbs. of steel springs—it has been in use 18 months, and is in as good condition now as when first put under the engine.

Very respectfully yours,

GEO. S. GRIGGS,
Supt. of Machinery, Boston and Prov. R.R.

Fall River, February 2, 1850.

In answer to yours of the 20th ult. I would say that this company has for some 10 or 12 months past been using "Ray's India-rubber Springs." We have applied them to both passenger and freight cars with uniform success. They have invariably preserved their elasticity and consistency through all the extremes of weather; and we are now applying them whenever the steel spring fails. I am well satisfied that they are particularly adapted for railroad purposes.

Very respectfully yours,

GEO. HAVEN,
Supt. Fall River Railroad.

Jersey City, March 9, 1850.

This is to certify that the present form of Mr. F. M. Ray's India-rubber Car Spring I consider far superior to the form of Disk, having used both forms.

I take pleasure in recommending these springs to all railroad companies.

DAVID H. BAKER,
Foreman of Car Shop of N.J. R.R. & Trans. Co.

Harlem R.R. Depot,
New York, March 7, 1850.

This is to certify that we have used Mr. F. M. Ray's India-rubber Springs for over eighteen months, and find them to be easy and durable, and recommend them to railroad companies as being superior to anything we have tried.

J. M. SMART,
Foreman at 42d St. Depot.

Old Colony Railroad Office,
Boston, March 6, 1850.

EDWARD CRANE, Esq.,

President New England Car Co.,

Dear Sir: In compliance with your request I would state that the Old Colony Railroad Company have had in use upon their road, India-rubber Springs furnished by your company, for more than eighteen months past, during which time they have been extensively used under Passenger and Freight Cars, Locomotive Tenders, and for Drawer and Buffering Springs, with the most perfect success. The elasticity and consistency of the Rubber has never been unfavorably affected by either extremes of heat or cold—and from the experience which we have had in the use of Rubber Springs, I think them well adapted for railroad purposes—and therefore we have for some months past used Rubber almost exclusively, in all places where springs are required.

Respectfully yours, etc.,

JAS. H. MOORE,
Supt. O. C. Road.

Troy, February 27, 1850.

We have been using your India-rubber Car Springs for nearly two years—and we take pleasure in saying that in our opinion the rubber has to a certain extent already, and may eventually entirely supersede all other Springs for Railroad Car purposes. We now use it entirely for Draw Springs and Bumpers, considering it better and lighter than steel.

During our two years' experience in the use of it, we have not known any to lose their elasticity, or fail in any way; and we cheerfully recommend the rubber for railroad car springs. Very respectfully,

EATON, GILBERT & CO.

Passenger Car Linings.

THE Advertiser continues to make to order the Enamelled Car Linings which have been so highly approved the last three years, and are now exclusively used by all the Northern Railroads. No pains are spared to get out new styles, and adapt them to the tastes of every consumer.

Orders addressed to **CHARLES STODDER, No. 75 Kilby street, Boston,** will have prompt attention.
March 23, 1850. 2m

India-rubber for Railroad Cos.

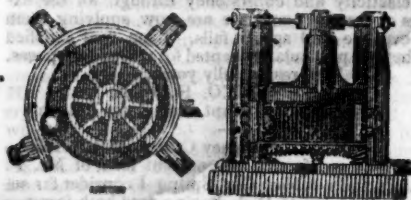
RUBBER SPRINGS—Bearing and Buffer—Fowler's Patent—Hose from 1 to 12 inches diameter. Suction Hose. Steam Packing—from 1-16 to 2 in. thick. Rubber and Gutta Percha Bands. These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.

New York, May 21, 1849.

Spikes, Spikes, Spikes.

ANY person wishing a simple and effective Spike Machine, or a number of them, may be supplied by addressing **J. W. FLACK,**
March 6, 1850. Troy, N.Y.

MACHINERY.**Henry Burden's Patent Revolving Shingling Machine.**

THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll sounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

Brown's Old Established SCALE WARE HOUSE,

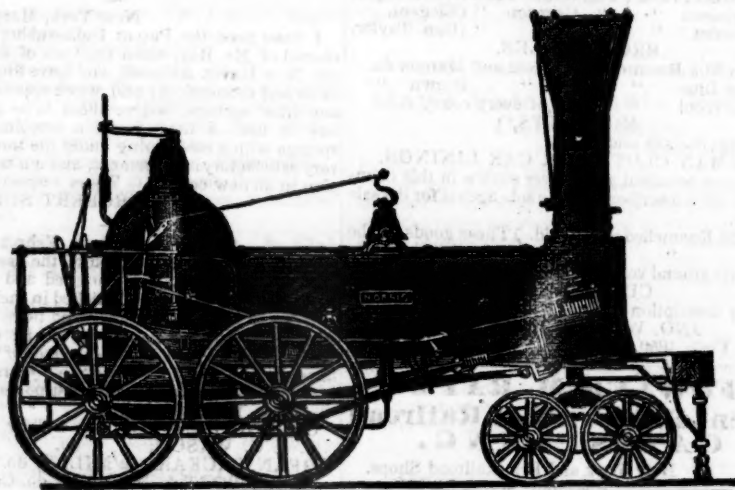
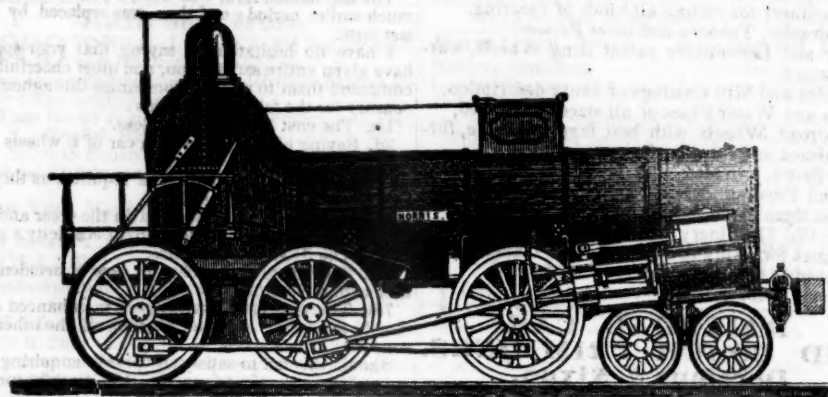
NO. 234 WATER ST., NEW YORK.

THE Subscriber, Practical Manufacturer of Scales of every description, respectfully asks the attention of Railroad Companies to his Improved Wrought Iron Railroad Track and Depot Scales which for strength, durability, accuracy, convenience in weighing, and beauty of workmanship, are not surpassed by any others in this country.

He is aware that this is rather a bold assertion for him to make, yet he can say with confidence that they have but to be tried to give them precedence over all others. J. L. BROWN.

Bank Scales made to order, and all Scales of his make Warranted in every particular.

References given if required

NORRIS' LOCOMOTIVE WORKS.
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,

THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS

PATENT MACHINE MADE HORSE-SHOES.

The Troy Iron and Nail Factory have always on hand a general assortment of Horse Shoes, made from Refined American Iron.

Four sizes being made, it will be well for those ordering to remember that the size of the shoe increases as the numbers—No. 1 being the smallest.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

Etna Safety Fuse.

THIS superior article for igniting the charge in wet or dry blasting, made with DUPONT'S best powder, is kept for sale at the office and depot of

REYNOLDS & BROTHER,

Sole Manufacturers, No. 85 Liberty St.,

NEW YORK.

And in the principal cities and towns in the U. States.

The Premium of the AMERICAN INSTITUTE was awarded to the Etna Safety Fuse at the late Fair held in this city.

November 3, 1849.

ly

**COLUMBUS, OHIO,
Railroad Car Manufactory.
RIDGWAYS & KIMBALL,**

HAVE established at this central point, the manufacture of Passenger, Freight, Gravel and Hand Cars for Railroads, and assure all Western Railroad Companies that it will be their constant aim to procure the best materials and workmen, and to turn out the best kind of work at fair prices. Specimens may be seen on the Columbus and Xenia Railroad. The patronage of Railroad Companies is respectfully solicited. ly8

To Inventors and Patentees.

OWEN G. WARREN, ARCHITECT, Has had many years' experience as Agent for obtaining Patents, both in this country and Europe, and will transact such business promptly and reasonably. Persons at a distance can have their business done by correspondence—without the necessity of visiting this city or Washington. Office No. 94 Merchants Exchange, Wall st., corner of Hanover st., up stairs. ly3

MR. HALE:—"The New England Car Co., having been engaged for the last six months in introducing the Vulcanized India-rubber Car Springs upon the different railroads in this and other states, and having in particular introduced it upon the Boston and Worcester railroad with perfect success, were much gratified to find, by your paper of this morning, that the article had given satisfaction to the president of that corporation, and the terms of just commendation in which you were pleased to speak of it. But their gratification was scarcely equalled by their surprise, when, or arriving at the close of your paragraph, they found the results of all their labors attributed to a foreign source, with which the New England Car Co. has no connection. The material used on the Boston and Worcester railroad, and all the other railroads in this country, where any preparation of India-rubber has been successfully applied, is entirely an American invention, patented in the year 1844 to Charles Goodyear, of New Haven, Conn., and the application of it to this purpose and the form in which it is applied are the invention of F. M. Ray of New York. The only material now in use, and so far as has yet appeared, the only preparation of India rubber capable of answering the purpose, has been furnished under these patents by the New England Car Company, manufactured under the immediate inspection of their own agent. If any other should be produced, the right to use it would depend upon the question of its interference with Mr. Goodyear's patent. The New England Car Company have their place of business in this city at No. 99 State street, and are prepared to answer all orders for the Vulcanized India rubber Car Springs, of the same quality and of the same manufacture as those which they have already placed on your road, and most for the other roads terminating in this city."

And yet Mr. Knevelt is using these experiments made upon the Springs of the Car Company to induce the public to purchase his springs, and is attempting to impose upon them the belief that the springs used were furnished by him! We ask whether such a course is honorable, or entitles his statements to much consideration from the public.

The above Springs are for sale 98 Broadway, New York, and 99 State street, Boston.

EDWARD CRANE Agent, Boston.
F. M. RAY, Agent, New York.

Boston, May 8, 1849.

STABILITY—SECURITY—PERPETUITY.
Mutual Life Insurance Co. of
New York.

No. 35 WALL STREET.
A MILLION OF DOLLARS

Securely invested in Bonds and Mortgages on real estate in this city and Brooklyn, and stocks of the State and City of New York and United States Government.

The company declared a dividend of profits of fifty-two per cent. on all existing policies on the 31st of January, 1848.

All the Profits are Divided Among the Insured.
Persons may effect insurance on their own lives and the lives of others.

A married woman can insure the life of her husband, the benefits of which are secured by law for the exclusive use of herself or children.

Clergymen and all others dependent upon salaries or their daily earnings are specially invited to avail themselves of a resource whereby their surviving families may be secured from the evils of penury.

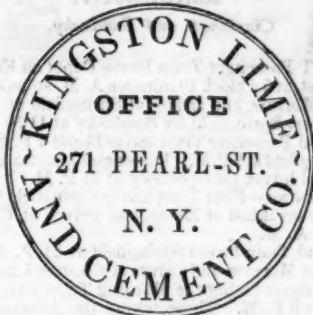
Pamphlets explanatory of the principles of Mutual Life Insurance, and illustrating its advantages, with forms of application, may be obtained at the office of the company, 35 Wall street, or of any of its agents.

TRUSTEES.

Jos. B. Collins,	Abraham Bininger,
Wm. J. Hyslop,	Alfred Edwards,
R. H. McCurdy,	Wm. Betts,
Fred. S. Winston,	Joseph Blunt,
C. W. Faber,	Isaac G. Pearson,
John P. Yelverton,	Henry Wells,
Theo. Sedgwick,	Wm. Moore,
Stacy B. Collins,	George R. Clark,
John H. Swift,	Jona. Miller,
John Wadsworth,	David A. Comstock,
S. M. Cornell,	Robert Schuyler,
Gouv. M. Wilkins,	James Chambers,
John V. L. Pruyn,	Joseph Tuckerman,
Jas. S. Wadsworth,	Moses H. Grinnell,
Charles Ely,	Wm. J. Banker,
John C. Cruger,	John M. Stuart,
Charles King,	Francis S. Lathrop,
Alfred Pell,	Nathaniel Hayden.

JOSEPH B. COLLINS, President.
ISAAC ABBATT, Secretary.

Hydraulic Cement.



HYDRAULIC CEMENT, OF BEST QUALITY, manufactured at their works, for sale in lots to suit purchasers.

Also, Ground Lime, a superior article for Builders.

ISAAC FRYER, Sec'y.

January 19, 1850.

Engine and Car Works,
PORTLAND, MAINE.

THE PORTLAND COMPANY, Incorporated August 8th, 1846, with a capital of \$250,000, have erected their extensive Works upon the deep water of Portland Harbor, and receive and transport, to and from their works direct, to and from vessels of any class.

They now manufacture to order, and deliver upon the Railroads running in each direction from the city, or on shipboard as wanted, Locomotive, Stationary, or Steam Boat Engines; Passenger, Mail, Freight, Earth and Hand Cars; Railway Frogs, Switches, Chairs and Castings; and every other description of Machinery.

HORACE FELTON,
Superintendent.

JAMES C. CHURCHILL,
General Agent and Clerk.

RAILROADS.

EASTERN RAILROAD.

SUMMER ARRANGEMENT.

On and after Monday, June 17th, 1850, trains will leave Boston daily (Sundays excepted):

For Lynn, 7, 9 $\frac{1}{2}$, 11 a.m., 12 m., 2 $\frac{1}{2}$, 4 $\frac{1}{2}$, 5, 6, 7 p.m.
Salem, 7, 9 $\frac{1}{2}$, 11 a.m., 12 m., 2 $\frac{1}{2}$, 3, 4 $\frac{1}{2}$, 6, 7 p.m.
Manchester and Gloucester, 9 $\frac{1}{2}$ a.m., 3, 6 p.m.
Marblehead, 7, 9 $\frac{1}{2}$, 12 a.m., 2 $\frac{1}{2}$, 4 $\frac{1}{2}$, 6, 7 p.m.
Ipswich, 7, 11, 12 a.m., 2 $\frac{1}{2}$, 4 $\frac{1}{2}$, 7 p.m.
Newburyport, 7, 11, 12 a.m., 2 $\frac{1}{2}$, 4 $\frac{1}{2}$, 7 p.m.
Portsmouth, 7, 11 a.m., 4 $\frac{1}{2}$ p.m.
Portland, Me., 7, 11 a.m., 4 $\frac{1}{2}$ p.m.

And for Boston,

From Portland, 5, 10 $\frac{1}{2}$ a.m., 6 p.m.
Portsmouth, 7 $\frac{1}{2}$ a.m., 1, 7 $\frac{1}{2}$ p.m.
Newburyport, 6 $\frac{1}{2}$, 8 $\frac{1}{2}$, 11 a.m., 1 $\frac{1}{2}$ *, 5, 8 p.m.
Ipswich, 7:40, 8:35, 11:42 a.m. 2:20, 5:22, 8 $\frac{1}{2}$ p.m.
Gloucester, 7 $\frac{1}{2}$ a.m., 1 $\frac{1}{2}$, 8 p.m.
Manchester, 7 a.m., 2 p.m.
Salem, 6 $\frac{1}{2}$, 7 $\frac{1}{2}$ *, 8 $\frac{1}{2}$ *, 9 $\frac{1}{2}$, 10 $\frac{1}{2}$ a.m., 12 $\frac{1}{2}$ *, 2 $\frac{1}{2}$ * 3*, 6*, 9*, p.m.
Lynn, 6 $\frac{1}{2}$, 7 $\frac{1}{2}$ *, 8 $\frac{1}{2}$ *, 9 $\frac{1}{2}$, 10 $\frac{1}{2}$ a.m., 12 $\frac{1}{2}$ *, 2 $\frac{1}{2}$ *, 3 $\frac{1}{2}$ *, 6 $\frac{1}{2}$ *, 9 $\frac{1}{2}$ * p.m.

*Or on their arrival from the East.
Freight trains each way daily. Office 17 Merchants' Row, Boston.

JOHN KINSMAN, Superintendent.

ALBANY AND BUFFALO RAILROADS.

Four Trains daily, Sundays excepted, viz:
Leave Albany, 6 a.m., 9 a.m., 2 p.m., 7 p.m.
Reach Buffalo, 15 hours, 18 hours, 23 hours, 18 hours.
Arrive from Buffalo, 7 p.m., 2 $\frac{1}{2}$ a.m., 12 $\frac{1}{2}$ m., 3 $\frac{1}{2}$ p.m.

Passengers by the Express Train reach Buffalo from New York, and New York from Buffalo, in 24 hours. The Isaac Newton and Oregon connect at Albany with this Train. Baggage cars, with careful baggage masters, run through with all the trains.

For Schenectady, Saratoga Springs & Whitehall, Leave Albany at 7 a.m. and 2 p.m. For Schenectady only at 6, 7 and 9 a.m. and 12 $\frac{1}{2}$, 2 and 7 p.m. For Erie Canal packets at 7 a.m. and 7 p.m. By Plank Road from Schenectady to Saratoga at all hours by stages, etc.

The Eastern Trains leave Albany at 7 a.m. and 3 p.m. The wagons of the company take baggage free between railroads and steamboats at Albany.

E. FOSTER, Jr., Sec'y
Albany and Schenectady Railroad Co.
Albany, August, 1849.

BOSTON AND MAINE RAILROAD.

Summer Arrangement, 1850.

Outward Trains from Boston

For Portland at 7, 11, a.m. and 4 $\frac{1}{2}$ p.m.
For Great Falls at 7, 11, a.m., 4 $\frac{1}{2}$ p.m.
For Haverhill at 7, 9, 11 a.m., 2 $\frac{1}{2}$, 4 $\frac{1}{2}$, 6 $\frac{1}{2}$ p.m.
For Lawrence (South Side), 7, 11 a.m., 2 $\frac{1}{2}$, 4 $\frac{1}{2}$ p.m.
" (North ") 7 $\frac{1}{2}$, 9, a.m. 12m., 5, 6 $\frac{1}{2}$ p.m.

For Reading 7, 9, 11 a.m. 12m. 2 $\frac{1}{2}$, 4 $\frac{1}{2}$, 5, 6 $\frac{1}{2}$, 7, 9 $\frac{1}{2}$ p.m.
The Station in Boston is on Haymarket Square.

THOS. S. WILLIAMS, Super't.

July 1, 1850.

NEW YORK AND HARLEM RAILROAD.

NEW ARRANGEMENT.

On and after Wednesday, October 17th, 1849, the Cars will run as follows, (Sundays excepted) until further notice:

Trains will leave the City Hall, New York, for—

Harlem and Morrisania at 6 $\frac{1}{2}$, 8, 10, 11, 12 a.m., 2, 3 $\frac{1}{2}$, 4, 5, 6 $\frac{1}{2}$ p.m.

New Village, at 8 $\frac{1}{2}$, 10, 12 a.m., 3 $\frac{1}{2}$, 5, 6 $\frac{1}{2}$ p.m.

Fordham and Williams' Bridge, at 8 $\frac{1}{2}$, 10, 12 a.m., 2 $\frac{1}{2}$, 3 $\frac{1}{2}$, 5, 6 $\frac{1}{2}$ p.m.

Hunt's Bridge, Underhill's and Hart's Corners, at 8 $\frac{1}{2}$, 10 a.m., 3 $\frac{1}{2}$, 5 p.m.

Tuckahoe and White Plains, at 8 $\frac{1}{2}$, 10 a.m., 2 $\frac{1}{2}$, 3 $\frac{1}{2}$, 5 p.m.

Pleasantville, New Castle, Bedford, Mechanicsville, Purdy's, Croton Falls, and intermediate stations, on signal, 8 $\frac{1}{2}$ a.m., 2 $\frac{1}{2}$, 3 $\frac{1}{2}$ p.m.

Brewster's, Towners, Patterson, Paulding's, South Dover, Dover Furnace, and Dover Plains, 8 $\frac{1}{2}$ a.m., 2 $\frac{1}{2}$ p.m.

Returning to New York will leave

Harlem and Morrisania at 6 08, 7 $\frac{1}{2}$, 8 37, 9, 10 6, 12 a.m., 1 43, 3 07, 3 $\frac{1}{2}$, 5, 5 47 p.m.

New Village, at 5 58, 8 27, 9 56 a.m., 1 33, 2 57, 5 36 p.m.

Fordham and William's Bridge at 5 $\frac{1}{2}$, 8 14, 9 43, 10 57 a.m., 1 20, 2 44, 5 24 p.m.

Hunt's Bridge at 8 04, 9 33 a.m., 2 34, 5 16 p.m. On signal.

Underhill's, at 7 56, 9 23 a.m., 2 26, 5 10 p.m. On signal.

Tuckahoe at 7 53, 9 18, 10 40 a.m., 2 23, 5 08 p.m.

Hart's Corners at 7 38, 9 03 a.m., 2 08, 4 54 p.m.—On signal.

White Plains at 7 $\frac{1}{2}$, 8 55, 10 20 a.m., 2, 4 47 p.m.

Davis' Brook at 8 40, 10 11 a.m., On signal. 4 39 p.m. On signal.

Unionville, 8 27, 10 11 a.m. On signal. 4 29 p.m.—On signal.

Pleasantville at 8 20, 9 56 a.m., 4 24 p.m.

Champanqua, at 8 10, 9 50 a.m. On signal. 4 18 p.m. On signal.

New Castle, at 7 56, 9 39 a.m., 4 07 p.m.

Bedford at 7 46, 9 32 a.m., 4 02 p.m.

Mechanicsville at 7 36, 9 22 a.m., 3 52 p.m.

Golden's Bridge, 7 28, 9 17 a.m. On signal, 3 47 p.m. On signal.

Purdy's at 7 20, 9 09 a.m., 3 39 p.m.

Croton Falls, at 7 $\frac{1}{2}$, 9 04 a.m., 3 34 p.m.

Brewster's, at 8 50 a.m., 3 20 p.m.

Towners, at 8 35 a.m., 3 05 p.m.

Patterson, at 8 27 a.m., 2 57 p.m.

Paulding's, at 8 17 a.m., 2 47 p.m.

South Dover, 8 02 a.m., 2 32 p.m.

Dover Furnace, 7 55 a.m., 2 25 p.m.

Dover Plains, at 7 45 a.m., 2 15 p.m.

The trains for Harlem and Morrisania leaving City Hall at 6 $\frac{1}{2}$, 8, 10, 11, 12, 2, 4 and 6 $\frac{1}{2}$, returning from Morrisania and Harlem at 6 03, 7 $\frac{1}{2}$, 9, 12, 1 43, 3 07, 3 $\frac{1}{2}$ and 5 o'clock, will land and receive passengers at 27th 42d, 51st, 61st, 79th, 86th, 109th, 115th, 125th and 132d streets.

The Dover Plains train from New York at 2 $\frac{1}{2}$ p.m., returning leaving Dover Plains at 7 $\frac{1}{2}$ a.m., will not stop between White Plains and New York, (except at Tuckahoe, Williams' Bridge and Fordham,) unless to leave passengers coming from above Croton Falls.

A car will precede each train ten minutes to take up passengers in the city. The last car will not stop, except at Broome st. and 27th street.

Freight Trains leave New York at 1 o'clock p.m.—Returning, leaves Dover Plains at 12 o'clock m.

For Sunday Arrangements, see hand bills.

M. SLOAT, Sup't.

AMERICAN RAILROAD JOURNAL.

NEW YORK & ERIE RAILROAD.

Summer Arrangement, 1850.

Steamboats leave daily, Sunday excepted, from the pier foot Duane st., at 6 $\frac{1}{2}$ a.m., and 6 $\frac{1}{2}$ p.m., for Piermont, there connecting with the new and comfortable broad gauge cars of this road, running to Jefferson at the head of Seneca Lake in 12 hours, where passengers take the new and splendid steamer Benj. Loder for Geneva. At Geneva they take any of the trains of the central line for Rochester, Buffalo, and the west. Breakfast and supper on board the steamboats at each end.

Express freight trains daily over the whole road in 24 hours.

FARES.	
Between New York and Buffalo,	\$9 85
" " Geneva,	6 00
" " (second class, 4 50	
CHAS. MINOT, Supt.	

August 1st, 1850.

NORTHERN RAILROAD, NEW YORK.

CARS run between Rouses Point and Chateaugay daily, Sundays excepted, as follows:

Leave Rouses Point at	3 $\frac{1}{2}$ A.M.
Leave Chateaugay at	6 $\frac{1}{2}$ P.M.

On the arrival of the cars at Chateaugay, stages are in readiness to take the passengers to Ogdensburg, where they arrive the same day.

Passengers leave Ogdensburg in the morning by stage, and take the evening train from Chateaugay to Rouses Point, where they go immediately on board the steamboats which run north and south on Lake Champlain.

Passengers leaving New York in the evening by the way of Whitehall, will arrive at Rouses Point the next night, and the next morning pass directly from the boat to the cars, and arrive at Ogdensburg the same day.

CHARLES L. SCHLATTER, Supt.

WESTERN AND ATLANTIC RAILROAD, FROM ATLANTA, GA., TO CHATTANOOGA, TENN. 140 Miles.

PASSENGER SCHEDULE.

Leave Chattanooga daily, Sundays excepted, at 8 $\frac{1}{2}$ a.m.	
Arrive at Kingston	by 12 m.
" Dalton	by 3 p.m.
" Chattanooga	by 6 "
Leave Chattanooga daily, Sundays excepted, at 7 a.m.	
Arrive at Dalton	by 9 $\frac{1}{2}$ "
" Kingston	by 12 m.
" Atlanta	by 4 p.m.

The fare is now permanently reduced to three cents per mile for way as well as through Passengers; children and servants two cents per mile.

There are two Railroad routes from Atlanta to the Seaboard, viz: one by the Georgia Railroad to Augusta, and thence to Charleston by the South Carolina Railroad; the other by the Macon and Western Railroad to Macon, and thence to Savannah by the Central Railroad.

At Kingston, 60 miles north of Atlanta, the Rome Railroad branches off to Rome on the Coosa river, which admits of steamboat navigation as far down as Greensport in Ala. Mail stages are in operation from Rome leading towards Tuscaloosa, Ala., Columbus, Miss., Memphis, Tenn., etc.

At Dalton, 100 miles north of Atlanta, a line of stages branches off to Knoxville, Tenn., which will be superseded by the East Tennessee and Georgia Railroad as rapidly as the same is completed.

At Chattanooga a number of steamboats are in successful operation on the Tennessee river, and from that terminus of the road stages run to Nashville, which will be superseded by the Nashville and Chattanooga Railroad as rapidly as the same is completed.

WM. D. FULLTON, Supt. Transp.

Transportation W. & A. R. R., Atlanta, March, 1850.

GREAT NORTHERN & SOUTHERN MAIL ROUTE.

From New York to Charleston, S. C. daily, via Philadelphia, Baltimore, Washington City, Richmond, Petersburg, Weldon and Wilmington, N. C.

Travellers by this route, leaving New York at 4 $\frac{1}{2}$ p.m., Philadelphia at 10 p.m., and Baltimore at 6 a.m., proceed without delay at any point on the route, arriving at Richmond, Va., in a day, and at Charleston, S. C., in two and half days from New York.

Through tickets from New York to Charleston, \$20 00	
" " " Baltimore to Richmond, 7 00	
" " " Petersburg, 7 50	

For tickets to Richmond and Petersburg, or further information, apply at the Southern Ticket Office, adjoining the Washington Railroad Ticket Office, Pratt Street, Baltimore.

STOCKTON & FALLS.

LITTLE MIAMI RAILROAD.—SUMMER ARRANGEMENT.

Cincinnati and Sandusky.

FIRST Passenger Train leaves Depot on East Front street, at 5 o'clock 10 minutes A. M. stops for breakfast at Morrow, and arrives at Springfield at 11 10 A. M. Leaves Springfield for Sandusky at 11 50 A. M.

Second Passenger Train leaves Depot 3 P. M. arrives at Springfield at 9 P. M. Passengers take tea at Springfield, and leaves for Sandusky at 9 $\frac{1}{2}$ P. M.

RETURNING.—First Train leaves Springfield at 4 A. M. Stop for breakfast at Xenia, and arrives at Cincinnati at 10 15 A. M.

Second Train leaves Springfield at 2 $\frac{1}{2}$ P. M. Stop for tea at Morrow, and arrives at Cincinnati, at 8 $\frac{1}{2}$ P. M. Passengers taking the Morning Train arrive at Sandusky at 9 P. M. Those taking the Afternoon Train arrive at 7 $\frac{1}{2}$ A. M. next morning, and proceed directly on in the boats.

Passengers for Columbus, Zanesville, Wheeling, and intermediate towns, should take the 5, 10 A. M. Train. The Ohi Stage Company are running the following Lines in connection with the Trains:

A Daily Daylight Line to Columbus from Springfield in connection with the Morning Train from Cincinnati. Also, Daily Lines to Columbus, from Xenia and Springfield, connecting with the 3 o'clock p.m. train from Cincinnati.

Fare from Cincinnati to Xenia	\$1 90
" " Springfield	2 50
" " Sandusky city	6 50
" " Buffalo	10 00
" " Columbus	4 50

For other information and through tickets, apply at the Ticket Office on Broadway, near Front-st., Cincinnati.

W. H. CLEMENT, Superintendent.

The Company will not be responsible for Baggage exceeding 50 dollars in value, unless the same is returned to the Conductors or Agent, and freight paid at the rate of a passage for every 500 dollars in value above that amount.

PHILADELPHIA, WILMINGTON, & BALTIMORE RAILROAD.

Summer Arrangement.

April 1st, 1849.—Fare \$3.

Leave Philadelphia 8 $\frac{1}{2}$ a.m., and 10 p.m.	
Leave Baltimore 9 a.m., and 8 p.m.	
Sunday—Leave Philadelphia at 10 p.m.	
" Baltimore at 8 p.m.	

Trains stop at way stations.

Charleston, S. C.

Through tickets Philadelphia to Charleston, \$20.

Pittsburg and Wheeling.

Through ticket, Philadelphia to Pittsburg, \$12.

" " Wheeling, 13.

Through tickets sold at Philadelphia office only.

Wilmington Accommodation.

Leave Philadelphia at 12 m. 4 and 7 p.m.

Leave Wilmington at 7 $\frac{1}{2}$ a.m., 4 $\frac{1}{2}$ and 7 p.m.

Newcastle Line.

Leave Philadelphia at 2 $\frac{1}{2}$ p.m.—Baltimore at 1 $\frac{1}{2}$ p.m.

Fare \$3.—Second class, \$2.

N.B.—Extra baggage charged for.

I. R. TRIMBLE, Gen. Supt.

BALTIMORE AND SUSQUEHANNA RAILROAD.—Reduction of Fare. Morning and Afternoon Trains between Baltimore and York.—The Passenger Trains run daily, except Sundays, as follows:

Leave Baltimore at	9 a.m. and 3 $\frac{1}{2}$ p.m.
Arrive at	9 a.m. and 6 $\frac{1}{2}$ p.m.
Leave York at	5 a.m. and 3 p.m.
Arrive at	12 $\frac{1}{2}$ p.m. & 8 p.m.
Leave York for Columbia at	1 $\frac{1}{2}$ p.m. & 8 a.m.
Leave Columbia for York at	6 a.m. & 2 p.m.

Fare:	
Fare to York	\$1 50
" Wrightsville	2 00
" Columbia	2 12 $\frac{1}{2}$

Way points in proportion.

PITTSBURG, GETTYSBURG, AND HARRISBURG.

Through tickets to Pittsburg via stage to Harrisburg	\$9
Or via Lancaster by railroad	10
Through tickets to Harrisburg or Gettysburg	3
In connection with the afternoon train at 3 $\frac{1}{2}$ o'clock, a horse car is run to Green Spring and Owings' Mill, arriving at the Mills at	5 $\frac{1}{2}$ p.m.
Returning, leaves Owings' Mills at	7 a.m.

D. C. H. BORDLEY, Supt.

Ticket Office, 63 North st.

PHILADELPHIA & READING RAILROAD

Passenger Train Arrangement for 1850.

A Passenger Train will leave Philadelphia and Pottsville daily, except Sundays, at 9 o'clock a.m.

The Train from Philadelphia arrives at Reading at 12 18 m.

The Train from Pottsville arrives at Reading at 10 43 a.m.

	Fares.	Miles.	No.1.	No.2.
Between Philad. and Pottsville,	92	\$3.50 and \$3.00		
" " Reading,	58	2.25	1.90	
" " Pottsville	34	1.40	1.20	

Five minutes allowed at Reading, and three at other way stations.

Passenger Depot in Philadelphia corner of Broad and Vine streets.

BALTIMORE AND OHIO RAILROAD AND WASHINGTON BRANCH.

On and after January 1, 1850, Passenger Trains will run as follows:

Leave Baltimore for Ellicott's Mills, Frederick, Harper's Ferry, Martinsburg, Hancock and Cumberland, every morning at 7 $\frac{1}{2}$ o'clock. This line carries the Great Mail, and connects with Post Coaches at Cumberland, for Wheeling and Pittsburg, over the National Road. Also with the Winchester Trains, at Harper's Ferry. N.B.—Passengers for Pittsburg take the steamers of the Monongahela slack water navigation at Brownsville, only 76 miles from Cumberland.

Leave Baltimore for Ellicott's Mills, Frederick and Harper's Ferry, daily, except Sunday, at 4 $\frac{1}{2}$ p.m.

Leave Baltimore for Washington City, daily, at 6 a.m. and 5 p.m.—daily, except Sunday, at 9 a.m. The early train connects with the Great Southern Line, via Fredericksburg and Richmond, to Charleston.

Leave Cumberland for Baltimore, etc., at 8 $\frac{1}{2}$ a.m., daily, connecting with the train from Winchester at Harper's Ferry—with the Evening Train to Washington City, at the Relay House—and with the Evening Train to Philadelphia, at Baltimore. Time for arriving at Baltimore, 5 $\frac{1}{2}$ p.m.

Leave Harper's Ferry for Baltimore, daily, except Sunday, at 7 $\frac{1}{2}$ a.m.—taking in Passengers who leave Frederick at 8 $\frac{1}{2}$ a.m.

Leave Washington for Baltimore, daily, at 6 a.m. & 5 $\frac{1}{2}$ p.m., and daily, except Sunday, at 9 $\frac{1}{2}$ a.m. The early train connects at the Relay House with the morning line to Cumberland and the West, and at Baltimore with the day line to Philadelphia and New York.

Through tickets are sold at Philadelphia and Baltimore for Pittsburg and Wheeling, and at Philadelphia and New York for Charleston, S. C., at the following

RATES OF FARE.

	To Pittsburg.	Wheeling.	Charleston.		
	In winter.	Summer.	Win. Sum.	ton.	
From Philadelphia,	\$13	\$12	\$14	\$13	\$20
" Baltimore,	11	10	12	11	
" New York,					20

Passengers leaving New York not later than the afternoon line via Newark, etc., reach Baltimore in season to take the next morning's lines to the South and West.

Passengers leaving Cumberland in the morning and Washington in the evening lines, reach Baltimore in season to proceed to Philadelphia by the evening train at 8 p.m.—so as to reach New York before noon the next day.

An Emigrant line by burthen cars, leaves Baltimore every morning, except Sundays, at 4 o'clock—connecting with a line of the previous day from N. York—and at Cumberland with a wagon line to Pittsburg or Brownsville and Wheeling. Fare by this line:

From New York to Pittsburg,	\$8 00
" Philadelphia	6 50
" Baltimore	5 00

By order, J. T. ENGLAND, Agent.

SOUTH CAROLINA RAILROAD.—A Passenger Train runs daily from Charleston, on the arrival of the boats from Wilmington, N. C., in connection with trains on the Georgia, and Western and Atlantic Railroads—and by stage lines and steamers connects with the Montgomery and West Point, and the Tuscumbia Railroad in N. Alabama.

Fare through from Charleston to Montgomery daily \$26 50

Fare through from Charleston to Huntsville, Decatur and Tuscumbia 22 00

The South Carolina Railroad Co. engage to receive merchandise consigned to their order, and to forward the same to any point on their road; and to the different stations on the Georgia and Western and Atlantic Railroad; and to Montgomery, Ala., by the West Point and Montgomery Railroad.

JOHN KING, Jr., Agent.

FAIRBANKS' RAILROAD SCALES.—THE subscribers are prepared to construct at short notice, *Railroad and Depot Scales*, of any desired length and capacity. Their long experience as manufacturers—their improvements in the construction of the various modifications, having reference to strength, durability, retention of adjustment, accuracy of weight and dispatch in weighing—and the long and severe tests to which their scales have been subjected—combine to ensure for these scales the universal confidence of the public.

No other scales are so extensively used upon railroads, either in the United States or Great Britain;—and the managers refer with confidence to the following in the United States.

Eastern Railroad.	Boston & Maine Railroad.
Providence Railroad.	Providence and Wor. Road.
Western Railroad.	Concord Railroad.
Old Colony Railroad.	Fitchburg Railroad.
Schenectady Railroad.	Syracuse and Utica Road.
Balt. and Ohio Railroad.	Baltimore and Susq. Road.
Phila. & Reading Road.	Schuylkill Valley Road.
Central (Ga.) Railroad.	Macon and Western Road.
	New York and Erie Railroad.

And other principal Railroads in the Western, Middle and Southern States.

E. & T. FAIRBANKS & CO.

Agents, } FAIRBANKS & Co., 89 Water St., N. York.
 } A. B. NORRIS, 196 Market St. Philadelphia.
 April 22, 1849. ly*17

NOTICE TO Superintendents of Railroads.

TYLER'S PATENT SAFETY SWITCH.—The undersigned would respectfully call their attention to his Patent Safety Switch, which from long trial and late severe tests has proved itself perfectly reliable for the purpose for which it was intended. It is designed to prevent the train from running off when the switch is set to the wrong track by design or accident. The single rail or gate switch is established as the best and safest switch for the ordinary purpose of shifting cars from one track to another, but it is liable to the serious evil of having one track open or broken when connected with the other. My improvement entirely removes this evil, and while it accomplishes this important office, leaves the switch in its original simplicity and perfection of a plain unbroken rail, connecting one track with the other ready for use.

The following decision of the Commissioner of Patents is respectfully submitted to Railroad Engineers, Superintendents, and all others interested in the subject.

(COPY.)

UNITED STATES PATENT OFFICE,

Washington City, D.C., April 28th, 1846.

Sir: You are hereby informed that in the case of the interference between your claims and those of Gustavus A. Nicolls, for improvements in safety switches—upon which a hearing was appointed to take place on the 3d Monday in March, 1846, the question of priority of invention has been decided in your favor. Inclosed is a copy of the decision. The testimony in the case is now open to the inspection of those concerned.

Yours respectfully, EDMUND BURKE,
 Commissioner of Patents.

To Philos B. Tyler.

Any further information may be obtained by addressing P. B. TYLER, Springfield, Mass., or JOHN PENNILETON, Agent, 149 Hudson St., New York.

NORRIS' LOCOMOTIVE WORKS, SCHENECTADY, N. Y.

THESE Works are in full operation in Manufacturing to order, Locomotive Steam Engines & Tenders, of the best principle and construction of material, using wrought iron heavy frames with pedestals welded thereto, and all parts of the engine made of the best wrought iron, except cylinders, pumps and boxes—obtaining greater durability, and carrying less weight over the road, than engines constructed of cast iron.

Wrought Iron Tires made any required size, and Tire Bars bent and welded with dispatch.

Chilled Wheels for Cars, Trucks and Tenders, made from the toughest iron.

Driving and Tender and Car Wheels fitted to Axles with Brass Boxes and Springs, and Railroad Machinery generally. Manufactured and for sale by

April 11, 1849. E. S. NORRIS.

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WRIGHTMAN, manufacturing Chemists, Philadelphia. Jan. 20, 1849.

CENTRAL RAILROAD FROM SAVANNAH TO MACON, (Ga.) 190½ miles.

Passenger Trains leave Savannah and Macon daily at 7 a.m. Passenger trains arrive daily at Savannah, 6 15 p.m. " " Macon, 6 45 p.m.

This road, in connection with the Macon and Western road from Macon to Atlanta, and the Western and Atlantic road from Atlanta to Dalton, now forms a continuous line of 391½ miles in length* from Savannah to Dalton, Murray county, Ga. and with the Memphis Branch railroad, and Stages connect with the following places:

Tickets from Savannah to Macon,	\$5 75
" " " Atlanta,	9 50
" " " Augusta,	6 50
" " " Columbus,	15 00
" " " Opelika,	17 00
" " " Jacksonville, Ala.,	20 00
" " " Talladega,	
" " " Huntsville, Ala.,	22 00
" " " Decatur,	
" " " Tusculum, Ala.,	22 50
" " " Tusculooosa, Ala.,	
" " " Columbus, Miss.,	28 00
" " " Aberdeen,	
" " " Holly Springs,	
" " " Nashville, Tenn.,	
" " " Murphreesboro,	25 00
" " " Columbia, do.,	
" " " Memphis, do.,	30 00

An extra Passenger Train leaves Savannah on Saturdays, after the arrival of the Steam-ships from New York, for Macon, and connects with the Macon and Western railroad; and on Tuesdays, after the arrival of the Macon and Western cars, an extra Passenger Train leaves Macon to connect with the Steam ships for New York.

Stages for Tallahassee and intermediate places connect with the road at Macon, Mondays, Wednesdays, and Fridays, and with Milledgeville at Gordon daily.

Passengers for Montgomery, Mobile and New Orleans take stage for Opelika from Barnesville through Columbus, a distance of 97 miles, or from Griffin thro' West Point, a distance of 93 miles.

* The Western and Atlantic railroad will soon be completed between Dalton and Chattanooga, a distance of 423½ miles from Savannah, of which due notice will be given.

† Head of the West Point and Montgomery railroad, on which the fare to Montgomery is about \$2.

RATES OF FREIGHT FOR MERCHANDISE GENERALLY, FROM SAVANNAH TO MACON.

Measurement Goods.—Boxes of hats, bonnets, furniture, shoes, saddlery, dry-goods, and other measurement goods, per cubic foot - 13 cents.
 Crockery Ware, in crates, boxes or hhds, per cubic foot. - 10 "
 Goods by Weight, 1st class.—Boxes of glass, paints, drugs & confectionary, per 100 lbs., 50 "
 2d class—Sugar, coffee, rope, butter, cheese, lard, tobacco, leather, hides, copper, sheet and hoop iron, tin, hard and hollow ware, rice, boxes soap and candles, bagging, and other heavy articles not enumerated below, per 100 lbs., - 45 "
 3d class—Flour, bacon, liquors, pork, beef, fish, tallow and beeswax, per 100 lbs., 40 "
 4th class—Mill-gearing, pig and bar iron, grind and millstones, nails, spikes and coal, 100 lb. 30 "
 Barrels of beets, bread, crackers, potatoes, ice, fruit, oysters, onions, and all light bbls, each, 75 "
 Oil and molasses per hhd., (smaller casks in proportion) - \$6 00 "
 Salt per sack not exceeding 4 bushels, - 50 "
 Goods consigned to Thos. S. Wayne, Forwarding Agent, Savannah, will be forwarded free of commission. WM. M. WADLEY, Supt. Savannah, Ga., February 24, 1850.

ENGINEERS' AND SURVEYERS' INSTRUMENTS MADE BY EDMUND DRAPER, Surviving partner of STANCLIFFE & DRAPER.



No 23 Pear street, near Third, below Walnut, Philadelphia.

GEORGIA RAILROAD. FROM AUGUSTA TO ATLANTA—171 MILES.

AND WESTERN AND ATLANTIC RAILROAD, FROM ATLANTA TO DALTON, 100 MILES.

This Road, in connection with the South Carolina Railroad, and Western and Atlantic Railroad, now forms a continuous line, 408 miles in length, from Charleston to Dalton (Cross Plains) in Murray county, Ga. 32 miles from Chattanooga, Tenn.

RATES OF FREIGHT.

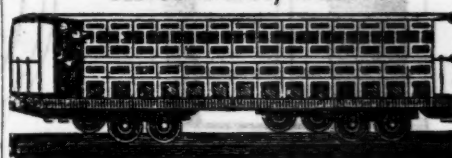
		Between Augusta and Dalton, 271 miles.	Between Charleston and Dalton, 408 miles.
1st class	Boxes of Hats, Bonnets, and Furniture, per cubic foot	\$0 18	\$0 28
2d class	Boxes and Bales of Dry Goods, Saddlery, Glass, Paints, Drugs, and Confectionary, per 100 lbs.	1 00	1 50
3d class	Sugar, Coffee, Liquor, Bagging, Rope, Cotton, Yarns, Tobacco, Leather, Hides, Copper, Tin, Feathers, Sheet Iron, Hollow ware, Castings, Crockery, etc.	0 60	0 85
4th class	Flour, Rice, Bacon, Pork, Beef, Fish, Lard, Tallow, Beeswax, Bar Iron, Ginseng, Mill Gearing, Pig Iron, and Grindstones, etc.	0 40	0 65
	Cotton, per 100 lbs.	0 45	0 70
	Molasses per hogshead	8 50	13 50
	" " barrel	2 50	4 25
	Salt per bushel	0 13	
	Salt per Liverpool sack	0 65	
	Ploughs, Corn Shellers, Cultivators, Straw Cutters, Wheelbarrows -	0 75	1 50

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile.

Goods consigned to S. C. Railroad Company will be forwarded free of commissions. Freight payable at Dalton.

F. C. ARMS, 44*ly Sup't of Transportation.

CAR MANUFACTORY CINCINNATI, OHIO.



KECK & DAVENPORT would respectfully call the attention of Railroad Companies in the West and South to their establishment at Cincinnati. Their facilities for manufacturing are extensive, and the means of transportation to different points speedy and economical. They are prepared to execute to order, on short notice, Eight-Wheeled Passenger Cars of the most superior description. Open and Covered Freight Cars, Four or Eight-Wheel Crank and Lever Hand Cars, Trucks, Wheels and Axles, and Railroad Work generally.

Cincinnati, Ohio, Oct. 2, 1848.

44ti

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for sometime in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee. G. A. NICOLLS, Reading, Pa.

FOWLER M. RAY'S METALLIC INDIA RUBBER CAR SPRINGS.

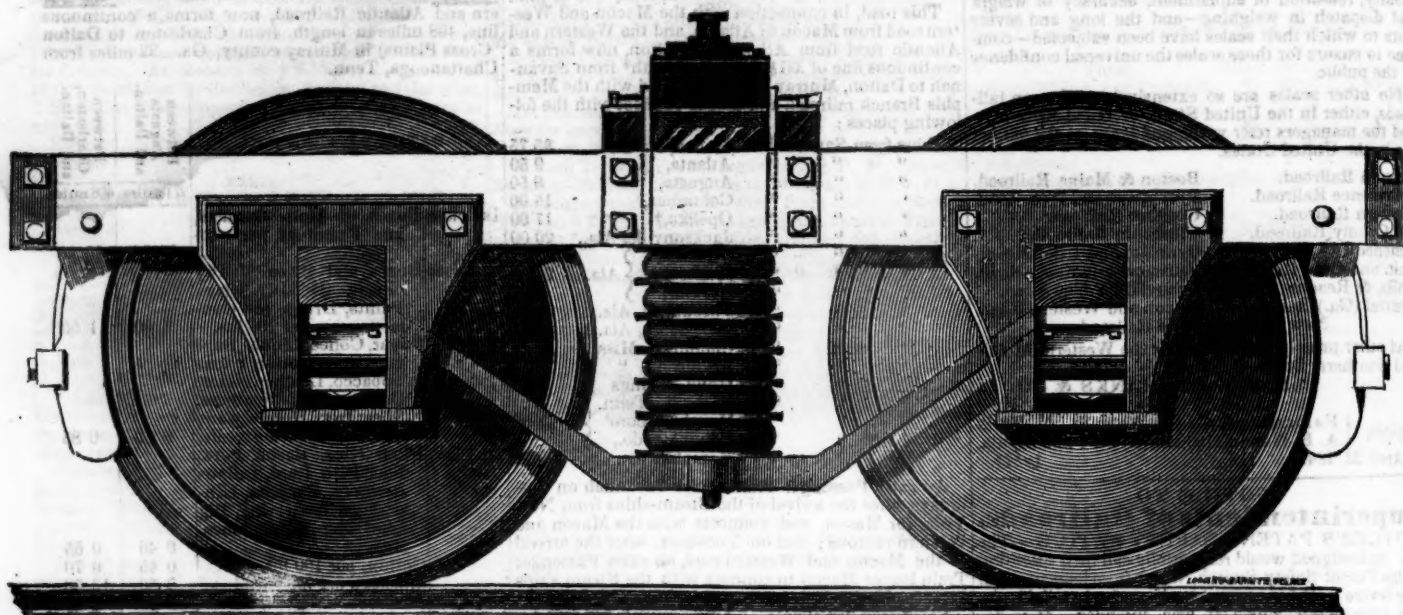


Fig. 1.

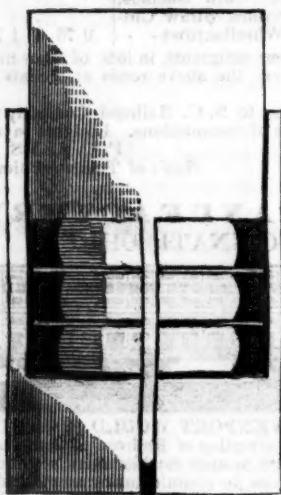


Fig. 2.

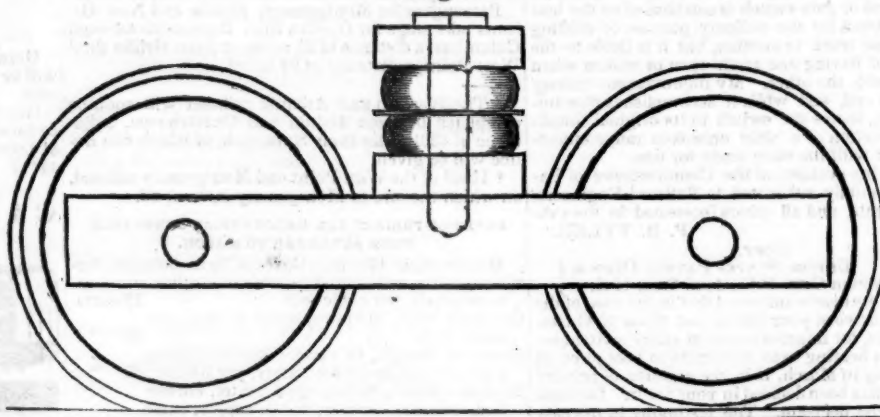


Fig. 3.

So much has been published for the purpose of misleading the public in regard to the inventorship of the India-rubber Spring, patented in the United States by Mr. W. C. Fuller, that the New England Car Company, proprietors of this invention, have deemed it proper, for the information of Railroad Companies, Car Builders and the public generally, to lay before them the facts upon which they found their claim to this invention, and to a Patent therefor.

Cut No. 1, Represents a cross section of the first model made by Mr. Tucker, under the direction of Mr. Ray, in the summer of 1844, and to which Mr. Tucker, Mr. Bradley and Mr. Bannister testify as being the model marked "B."

Cut No. 2, Represents the model made in 1845, to which Mr. Osgood Bradley and Gen. Thos. W. Harvey have testified.

Cut No. 3, Represents a rough sketch made by Mr. Ray in 1844, which he gave to a man about departing for England to take out some patents, who promised to write to Ray after his arrival in that country—which promise he has probably forgotten.

Mr. W. C. Fuller, of England, patented the above Spring in that country on the 23d October, 1845. He filed his enrollment April 23d, 1846, and on the 22d October, 1846, he took out a patent in the United States under the title, "For Improvement in Railway Carriages," when the improvement consisted in the spring, and not in the carriage.

The reader will perceive by the annexed testimony, that the India-rubber Railroad Car Spring was invented by Mr. Ray about two years previous to the date of Mr. Fuller's enrollment.

The Depositions are omitted for want of room, but will be published in full in the course of a few weeks.

AMERICAN RAILROAD JOURNAL.
PUBLISHED BY J. H. SCHULTZ & CO.
ROOM 12, THIRD FLOOR,
No. 136 Nassau Street,
NEW YORK.

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LETTERS and COMMUNICATIONS to this Journal may be directed to the Editor,
HENRY V. POOR,
136 NASSAU STREET.